1.2.2

Supporting Documents-

Department of Architecture

Copy of Syllabus of All Programs Offered Indicating Credits/Electives Approved by Board

1.1.2 & 1.2.2

Supporting Documents- Name of the Department- Architecture

Copy of Syllabus of all Programs offered indicating credits / electives approved by board

IK Gujral Punjab Technical University Kapurthala

FIRST YEAR
1st and 2nd SEMESTER MASTER OF ARCHITECTURE (ARCHITECTURAL EDUCATION AND RESEARCH)

1st SEMESTER

Course Type	S. No	Course Code	Course Title	Load Allocations					Marks %	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem / Tut	P/ FW	Stu	Total	Int : Ext		
PC	1	UC/MARCH-101/20	Studio-I	2	-	-	4	06	60:40		Viva Voce/ Ext. Jury
	2	UC/MARCH-102/20	Contemporary Architecture-I	2	2	-	-	04	40:60		03
Edu. & Res	3	UC/MARCH-103/20	Educational Technology	2	2	-	-	04	40:60		03
	4	UC/MARCH-104/20	Research Methodology-I	2	2	-	-	04	40:60		03
PE (Choos e one)		[illegible] 10/20									
	5	UC/MARCH/ MOOC-111-20	MOOC-I						-		Certificate from concerned/ imparting agency
			Total					22		18	

2nd SEMESTER

Course Type	S. No	Course Code	Course Title	Load Allocations					Marks %	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem / Tut	P/ FW	Stu	Total	Int : Ext		
PC	1	UC/MARCH-201/20	Studio – II	2	-	-	4	06	60:40		Viva Voce/ Ext. Jury
	2	UC/MARCH-202/20	Dissertation - I	2	2	-	-	04	40:60		03
Edu. & Res	3	UC/MARCH-203/20	Psychological of Teaching Learning	2	2	-	-	04	40:60		03
	4	UC/MARCH-204/20	Architecture Research Methodology-II	2	2		-	04	40:60		03
PE (Choos e one)		[illegible] 20									
	5	UC/MARCH-211-20 /20	MOOC-II						40:60		Certificate from concerned/ imparting agency
SEC	6	----	*Educational Tour/ Summer Training/ Vacation Assignment	-	-	-	-	-	-		Evaluation will be done in 3rd sem
			Total					22		18	

Elective I: 1. **Fundamentals** of built environment and resource conservation 2. Recent trends in sustainable architecture 3. Architectural Software
Elective II: 1. Architecture appreciation 2. Geomatics techniques for architects 3. Building Industry

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SECOND YEAR

3rd and 4th SEMESTER MASTER OF ARCHITECTURE (ARCHITECTURAL EDUCATION AND RESEARCH)

3rd SEMESTER

Course Type	S. No	Course Code	Course Title	Load Allocations					Marks %	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem / Tut	P/ FW	Stu	Total	Int : Ext		
PC	1	UC/MARCH-301/20	Studio – III	2	-	-	4	06	60:40	6	Viva Voce/ Ext. Jury
Edu. & Res	2	UC/MARCH-302/20	Architecture Appreciation	2	2	-	-	04	60:40		Viva Voce/ Ext. Jury
	3	UC/MARCH-303/20	Instructional methods	2	2	-	-	04	40:60		03
		UC/MARCH-304/20	*Educational Tour/ Summer Training/ Vacation Assignment	-	-	-	-	-	100		Viva Voce/ Int. Jury
PE (Choos e one)	4	/20	Table-)								
		UC/MARCH-321-30 /20	MOOC-III (Ref Table-)						-		Certificate from concerned/ imparting agency
OE (Choos e one)	6										
		UC/MARCH-331-40 /20	MOOC-IV (Ref Table-)						-		Certificate from concerned/ imparting agency
	Total							22	-	19	

4TH SEMESTER

Course Type	S. No	Course Code	Course Title	Load Allocations					Marks %	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem / Tut	P/ FW	Stu	Total	Int : Ext		
	1	UC/MARCH-401/20	Teaching Practice (Institutional Internship)	-	2	-	6	8	60:40		Viva Voce/ Ext. Jury
	2	UC/MARCH-402/20	Dissertation-II	-	2	-	10	12	60:40		Viva Voce/ Ext. Jury
	Total							20			
	Grand Total									72	

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Note: Table-1 (Abbreviation Used)

Abbreviation Used in the teaching scheme			
PC	Professional Core	L	Lecture
Edu. Research	Education & Research	Sem/Tut	Seminar/ Tutorial
SEC	Skill Enhancement Courses	P/FW	Practical/ Field Work
PE	Professional Electives	Stu	Studio
OE	Open Elective	Int.	Internal
MOOC	Massive Open Online Courses	Ext.	External

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Table no-1 Codes assigned to MOOC's of M. Architecture (AER).

Sr. No.	Track	MOOC (Stream)	1st SEM UC/MARCH/ MOOC-	2nd SEM UC/MARCH/ MOOC	3rd SEM UC/MARCH/ MOOC-	
			MooC -I	MooC-II	MooC- III	Mooc-IV
1	T1	Education/Teaching	111	211	321	331
2	T2	Allied Architecture/Design / Arts /Planning	112	212	322	332
3	T3	Energy/Environment	113	213	323	333
4	T4	Building Science & Applied Engineering / Building Services / Building Technology	114	214	324	334
5	T5	Computer Science/ Programming/ Data Sciences/ Software's/ Interruptive Technologies	115	215	325	335
6	T6	Management/ Business/ Entrepreneurship	116	216	326	336
7	T7	Humanities/Social Sciences	117	217	327	337
8	T8	Journalism/Mass Communication / Media	118	218	328	338
9	T9	Finance/Commerce/Economics Accounts	119	219	329	339
10	T10	Legal Services/Administration/ Personal Development / Health & Happiness / Miscellaneous	120	220	330	340

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Table no-2 Codes assigned to Professional/Open Electives in M. Architecture (AER).

	PROFESSIONAL ELECTIVE-I UC/MARCH	PROFESSIONAL ELECTIVE -II UC/MARCH	PROFESSIONAL ELECTIVE –III UC/MARCH	OPEN ELECTIVE-I UC/MARCH
	Traditional Indian Architecture	Climate & Architecture Climatology	Futuristic Architecture	Creative Writing – I
Code	105	205	305	311
	Ecology	Fundamental of Built environment & Resource Conservation	Green Buildings & Rating Systems	Health Education – I
Code	106	206	306	312
	Principles of Human Settlement	Smart Cities	Housing Policies	Human resource development & organization behavior
Code	107	207	307	313
	Building Industry	Geo special Technologies	Risk Management	Sociology & Psychology V/S Architecture
Code	108	208	308	314
	Architecture Appreciation & Criticism	Guidance & Counseling	E- Resources/ E- Learning	Thought Processes/ Mind Management
Code	109	209	309	315
	Digital Architecture/Advance Computer software	Environment & social issues in Architecture	Architecture Journalism & Photography	Life Skills
Code	110	201	310	316

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Bachelor's of Architecture (B.Arch): Teaching Scheme 2019 (For Constituent Campus)

Second Semester

Course Type	S. no	Course Code	Course Title	Load Allocations					Marks	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem/ Tut	P/F W	Stu.	Total	Int : Ext		
PC	1	UC/BARCH-201/19	Architectural Design -II	1	-	-	5	06	60:40		06 + External Viva Voce
	2	UC/BARCH-202/19	Architectural Drawing-II	1	-	-	3	04	60:40		03
	3	UC/BARCH-203/19	Architectural Graphics-II	1	-	-	2	03	60:40		03
	4	UC/BARCH-204/19	History of Architecture-II	2	-	-	-	02	40:60		03
BS &AE	5	UC/BARCH-205/19	Building Construction & Materials-II	1	-		4	05	60:40		03
	6	UC/BARCH-206/19	Theory of Structure- I	2	1	-	-	03	40:60		03
PAECC	7	UC/BARCH-207/19	Theory of Design- I	2	-	-	-	02	40:60		03
SEC	8	UC/BARCH-208/19	Workshop-II	-	-	2	-	02	100		No Exam only Internal Viva-Voce
	9	UC/BARCH-209/19	Environmental Science	2	-	-	-	02	40:60		03
	10	UC/BARCH-210/19	Mentoring & Professional Development- I	-	-	2	-	02	100	it	No Exam
	11	_____	*Educational Tour I/ Summer Training-I/ Vacation Assignment-I	-	-	-	-	-	100		Evaluation will be done in 3rd sem
			Total	12	1	4	14	31			

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*NOTES: Educational Tour of 1-2 week duration during or after the first year of studies must be undertaken and Summer Training/ Vacation assignment to be given based on UC/BARCH-209/19. The marking of the same will done in the third semester UC/BARCH-309/19

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Third Semester

Course Type	Sr. no	Course Code	Course Title	Load Allocations					Marks	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem/ Tut	P/F W	Stu	Total	Int : Ext		
PC	1	UC/BARCH-301/19	Architectural Design -III	1	-	-	5	06	60:40	6	06 + External Viva Voce
	2	UC/BARCH-302/19	Building Construction & Materials-III	1	-	-	3	04	60:40		04
BS &AE	3	UC/BARCH-303/19	Structure Systems-II	1	-	-	1	02	100		External Viva Voce
	4	UC/BARCH-304/19	Structure Design-I	2	2	-	-	04	40:60		03
	5	UC/BARCH-305/19	Surveying & Leveling	2	-	2	-	04	40:60		03
	6	UC/BARCH-306/19	Climate & Architecture-I	2	2	-	-	04	40:60		03
PAECC	7	UC/BARCH-307/19	Computer Application-I	1	-	2	-	03	100		External Viva Voce
SEC	8	UC/BARCH-308/19	* Educational Tour I/ Summer Training-I / Vacation Assignment-I	-	-	-	-	-	100		–
			Total	11	4	4	11	27		24	

Note: * UC/BARCH-309/19 is carried out in the intervening period of 2nd and 3rd semester, the evaluation of report/s to be done in the 3rd semester.

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Bachelor's of Architecture (B.Arch): Teaching Scheme 2019 (For Constituent Campus)

Third Semester

Course Type	Sr. no	Course Code	Course Title	Load Allocations					Marks	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem/ Tut	P/F W	Stu	Total	Int : Ext		
PC	1	UC/BARCH-301/19	Architectural Design -III	1	-	-	5	06	60:40		06 + External Viva Voce
	2	UC/BARCH-302/19	Building Construction & Materials-III	1	-	-	3	04	60:40		04
BS &AE	3	UC/BARCH-303/19	Structure Systems-II	1	-	-	1	02	100		External Viva Voce
	4	UC/BARCH-304/19	Structure Design-I	2	2	-	-	04	40:60		03
	5	UC/BARCH-305/19	Surveying & Leveling	2	-	2	-	04	40:60		03
	6	UC/BARCH-306/19	Climate & Architecture-I	2	2	-	-	04	40:60		03
PAECC	7	UC/BARCH-307/19	Computer Application-I	1	-	2	-	03	100		External Viva Voce
SEC	8	UC/BARCH-308/19	* Educational Tour I/ Summer Training-I / Vacation Assignment-I	-	-	-	-	-	100		_
			Total	11	4	4	11	27		24	

Note: * UC/BARCH-309/19 is carried out in the intervening period of 2nd and 3rd semester, the evaluation of report/s to be done in the 3rd semester.

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Fourth Semester — **Bachelor's of Architecture (B.Arch): Teaching Scheme 2019**

Course Type	Sr. no	Course Code	Course Title	Load Allocations					Marks	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem/ Tut	P/F W	Stu	Total	Int : Ext		
PC	1	UC/BARCH-401/19	Architectural Design -IV	1	-	-	5	06	60:40		06 + External Viva Voce
	2	UC/BARCH-402/19	History of Architecture-III	2	-	-	-	02	40:60		03
BS &AE	3	UC/BARCH-403/19	Building Construction & Materials-IV	1	-	-	3	04	60:40		03
	4	UC/BARCH-404/19	Structure Design-II	2	2	-	-	04	40:60		03
	5	UC/BARCH-405/19	Building Services-I	2	1	-	-	03	40:60		03
PAECC	6	UC/BARCH-406/19	Climate & Architecture-II	2	1	-	-	03	40:60		03
	7	UC/BARCH-407/19	Computer Application-II	1	-	2	-	03	60:40		External Viva Voce
	8	UC/BARCH-408/19	Mentoring and Professional Development-II	-	-	2	-	02	100:0		No Exam
SEC	9	UC/BARCH-409/19	Constitutional Law	2	-	-	-	02	40:60		03
	10	———	*Education Tour II / Summer Training II /Vacation Assignment II	-	-	-	-	-	–		The evaluation will be done in 5th sem
			Total	13	4	4	8	29		26	

*NOTES: Educational Tour of 1-2 week duration during or after the IInd year of studies (as a measure drawing /Documentation Camp) should be undertaken and Summer Training/ Vacation assignment to be given based on UC/BARCH-408/19. The marking of the same will done in the fifth semester UC/BARCH-518/1

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Fifth Semester

Course Type	Sr. no	Course Code	Course Title	Load Allocations					Marks	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem/ Tut	P/F W	Stu	Total	Int : Ext		
PC	1	UC/BARCH-501/19	Architectural Design -V	1	-	-	5	06	60:40		12 (in 2 days) + External Viva Voce
BS &AE	2	UC/BARCH-502/19	Building Construction & Materials-V	1	-	-	3	04	60:40		03
	3	UC/BARCH-503/19	Structure Systems-III	1	1	-	-	02	60:40		External Viva Voce
	4	UC/BARCH-504/19	Structure Design-III	2	2	-	-	04	40:60		03
	5	UC/BARCH-505/19	Building Services-II	2	1	-	-	03	40:60		03
PAECC	6	UC/BARCH-506/19	Theory of Design-II	2	1	-	-	03	40:60		03
	7	UC/BARCH-507/19	Landscape Architecture	2	1	-	-	03	40:60		03
P		(A) - 508 (E) /19									
		(A) - 509 (E) /19									
SEC	10	UC/BARCH-510/19	*Educational Tour II/ Summer Training-II/ Vacation Assignment-II	-	-	-	-	-	100	1	No Exam
			Total	15	7		8	30		31	

Note: * UC/BARCH-510/19 is carried out in the intervening period of 4th and 5th semester, the evaluation of report to be done in the 5th semester.

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Elective- I (Choose any one from the given choices)

UC/BARCH/ /508 (A)	Green Buildings & Rating System
UC/BARCH/ /508 (B)	Hill Architecture
UC/BARCH/ /508 (C)	Emerging Technologies in Architecture
UC/BARCH/ /508 (D)	Product Design
UC/BARCH/ /508 (E)	Architecture Acoustics
UC/BARCH/PE/MOOC508(F - O)	(Ref MOOC Table)

Open Elective-I (Choose any one from the given choices)

UC/BARCH/ /509 (A)	Sociology for Architects / Fundamentals of Sociology
UC/BARCH/ /509 (B)	Health Education- I
UC/BARCH/ /509 (C)	Music (Vocal, Instrumental),
UC/BARCH/ /509 (D)	Laser/ Printing Technology
UC/BARCH/ /509 (E)	Creative Writing
UC/BARCH/MOOC 509 (F - O)	(Ref MOOC Table)

Sixth Semester

Course Type	Sr.no	Course Code	Course Title	Load Allocations					Marks	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem/ Tut	P/F W	Stu	Total	Int : Ext		
PC	1	UC/BARCH-601/19	Architectural Design -VI	1	-	-	5	06	60:40	6	12 (in 2 days) + External Viva Voce
	2	UC/BARCH-602/19	History of Architecture-IV	2	-	-	-	02	40:60		03
	3	UC/BARCH-603/19	Estimating Costing & Specifications	2	1	-	-	03	40:60		03
	4	UC/BARCH-604/19	Architecture Legislation	2	-	-	-	02	40:60		03
BS &AE	5	UC/BARCH-605/19	Building Construction & Materials-VI	1	-	-	3	04	60:40		03
	6	UC/BARCH-606/19	Structure Design (Project) -IV	1	-	-	3	04	40:60		03
	7	UC/BARCH-607/19	Building Services-III	2	-	-	-	02	40:60		03
PAECC	8	UC/BARCH-608/19	Climate & Architecture (Sustainable Design) -III	2	-	-	-	02	40:60		03
P								03	40:60		03
		609 (E)/19									
		610 (E)/19	Swayam					02	100		No Exam
SEC	11	UC/BARCH-611/19	Mentoring and Professional Development-III	2	-	-	-				
			Total	20	4		8	32		30	

Elective- II (Choose any one from the given choices)

UC/BARCH-609 (A)	Sustainable Cities & Communities
UC/BARCH-609 (B)	Vernacular / Rural / Indigenous Architecture/ Mud Arch
UC/BARCH-609 (C)	Architecture Conservation/ Restoration and Preservation
UC/BARCH-609 (D)	Furniture Design

Open Elective-II (Choose any one from the given choices)

UC/BARCH-610(A)	Psychology for Architects
UC/BARCH-610(B)	Health Education- II
UC/BARCH-610(C)	Dance forms (any form)
UC/BARCH-610(D)	Web designing Management

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UC/BARCH-609 (E)	Lighting and Illumination/ Lighting Design	UC/BARCH-610(E)	Advanced HVAC & Design for Fire
UC/BARCH/PE/MOOC 609(F - O)	(Ref MOOC Table)	UC/BARCH/MOOC 610 (F - O) (Ref MOOC Table)	

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Seventh Semester

Course Type	Sr. no	Course Code	Course Title	Duration	Credits	Duration of Univ. Exam/ Viva-Voce
PAECC	1	UC/BARCH- 701/19	Practical Training	18 to 22 Weeks		No Exam/ Only Univ. Viva-Voce
			Total		12	

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Eighth Semester

Course Type	Sr. no	Course Code	Course Title	Load Allocations					Marks	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem/Tut	P/F W	Stu	Total	Int : Ext		
PC	1	UC/BARCH-801/19	Architectural Design -VII	1	-	-	6	07	60:40		Portfolio viva voce
	2	UC/BARCH-802/19	Comprehensive Smart Village Development/ Agro related infrastruture	1	-	-	3	04	60:40		Portfolio viva voce
	3	UC/BARCH-803/19	Urban Design	2	1	-	-	03	40:60		03
	4	UC/BARCH-804/19	Housing	2	1	-	-	03	40:60		03
BS &AE	5	UC/BARCH-805/19	Building Construction & Materials-VII	1	-	-	4	05	60:40		03
		806 (E) /19									
		807 (E)/19									
		808 (E)/19	Swayam								
	9	——	*Education Tour III / Summer Training III/ Vacation Assignment III	-	-	-	-	-	-		The evaluation will be done in 9th sem
			Total	13	4	-	13	30	40:60	30	

*NOTE: Educational Tour (of 10-15 days) or Vacation Assignment during or after the year of studies should be undertaken, the evaluation for the same will be done in the 9th Semester

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Elective- III (Choose any one from the given choices)		Elective- IV (Choose any one from the given choices)		Open Elective-III (Choose any one from the given choices)	
UC/BARCH-806 (A)	GIS/ Remote sensing/ Geospatial Technologies/Geomatics Techniques for Architects	UC/BARCH-807 (A)	Ekistics	UC/BARCH-808 (A)	Client psychology
UC/BARCH-806 (B)	Indian Architecture/ Vastu Shastra	UC/BARCH-807 (B)	Art Appreciation	UC/BARCH-808 (B)	Society's perception for architects & Architecture
UC/BARCH-806 (C)	Advance Building Materials	UC/BARCH-807 (B)	Industrial / Prefab Technologies	UC/BARCH-808 (C)	Generic Skills & Entrepreneurship development
UC/BARCH-806 (D)	Retail Design	UC/BARCH-807 (B)	Interior Design	UC/BARCH-808 (D)	Cyber laws & Ethics
UC/BARCH-806 (E)	Advance Structure Systems	UC/BARCH-807 (B)	Building Information Modelling (BIM)/ Advance Computer Software's	UC/BARCH-808 (E)	Human resources development & Organization behavior

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Ninth Semester

Course Type	S. no	Course Code	Course Title	Load Allocations					Marks	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem/ Tut	P/F W	Stu	Total	Int : Ext		
PC	1	UC/BARCH- 901/19	Architectural Design - VIII	1	-	-	6	07	60:40		External Viva Voce
PAECC	2	UC/BARCH -902/19	Research Methodology & Dissertation	2	-	-	3	05	60:40		03 Hours Theory exams. The dissertation to be marked by taking viva voce
	3	UC/BARCH- 903/19	Construction Management	2	1	-	-	03	40:60		03
BS &AE	4	UC/BARCH-904/19	Building Construction & Materials-VIII	1	-	-	4	05	60:40		04
P		905 (E)/19						03	40:60		03
O		(E)/19						03	40:60		03
SEC	8	UC/BARCH- 908/19	*Educational Tour III/Summer Training III/ Vacation Assignment-III	-	-	-	-	-	100		
			Total	12	3		13	28			

Note: * UC/BARCH-920/19 is carried out in the intervening period of 8th and 9th semester, the evaluation of report to be done in the 9th semester.

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Elective- V (Choose any one from the given choices)

UC/BARCH-905 (A)	Town & Country Planning
UC/BARCH-905 (B)	Art & Architecture
UC/BARCH-905 (C)	Building Maintenance
UC/BARCH-905 (D)	Graphics & Communication Design
UC/BARCH-905 (E)	Advance Digital Architecture

Elective- VI (Choose any one from the given choices)

UC/BARCH-906 (A)	Traffic & Transportation
UC/BARCH-906 (B)	Contemporary Indian Architecture (Modern Trends)
UC/BARCH-906 (C)	Building System Integration & Management
UC/BARCH-906 (D)	Cost effective Construction
UC/BARCH-906 (E)	Building Industry

Open Elective-IV (Choose any one from the given choices)

UC/BARCH-907 (A)	French
UC/BARCH-907 (B)	German
UC/BARCH-907 (C)	Spanish
UC/BARCH-907 (D)	Chinese
UC/BARCH-907 (E)	Any Indian Language

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IK Gujral Punjab Technical University Kapurthala
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Tenth Semester

Course Type	Sr. no	Course Code	Course Title	Load Allocations					Marks	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem/Tut	P/F W	Stu	Total	Int : Ext		
PC	1	UC/BARCH-1001/19	Architectural Design (Thesis Project) -IX	-	-	-	18	18	60:40	18	External Jury Viva Voce
PAECC	2	UC/BARCH-1002/19	Professional Practice	2	1	-	-	3	40:60		3
	3	UC/BARCH-1003/19	Disaster Management	2	1	-	-	3	40:60		3
P											
			Total	6	3		18	27		27	

Elective- VII (Choose any one from the given choices)

UC/BARCH-1004 (A) Building Economics
UC/BARCH-1004 (B) Contemporary World Architecture
UC/BARCH-1004 (C) Architecture Design With Steel and Glass/ High Rise Buildings
UC/BARCH-1004 (d) Architecture Journalism & Photography
UC/BARCH-1004 (E) Futuristic Architecture

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1.2.2 List of Programs in Which CBCS / Elective Course Implemented in the Last Academic Year

Name of the Department: Architecture

Program	Revision Year of Syllabus
B. Arch	2019
M. Arch (Architecture Education)	2020

(Signature of Head of Department)

Director
I.K.G.P.T.U
Mohali Campus-II

1.2.2 Link for the Syllabus for B.Arch, M.Arch & M.Planning

https://mohalicampus.ptu.ac.in/Syllabus

Director
I.K.G.P.T.U
Mohali Campus-II

New Approval vide 21.1.21

Fourth Semester

IK Gujral Punjab Technical University Kapurthala
Bachelor's of Architecture (B.Arch): Teaching Scheme 2019

Course Type	Sr. no	Course Code	Course Title	Load Allocations					Marks	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem/ Tut	P/F W	Stu	Total	Int : Ext		
PC	1	UC/BARCH-401/19	Architectural Design -IV	1	-	-	5	06	60:40	6	06 + External Viva Voce
	2	UC/BARCH-402/19	History of Architecture-III	2	-	-	-	02	40:60	2	03
BS &AE	3	UC/BARCH-403/19	Building Construction & Materials-IV	1	-	-	3	04	60:40	4	03
	4	UC/BARCH-404/19	Structure Design-II	2	2	-	-	04	40:60	4	03
	5	UC/BARCH-405/19	Building Services-I	2	1	-	-	03	40:60	3	03
PAECC	6	UC/BARCH-406/19	Climate & Architecture-II	2	1	-	-	03	40:60	3	03
	7	UC/BARCH-407/19	Computer Application-II	1	-	2	-	03	60:40	2	External Viva Voce
	8	UC/BARCH-408/19	Mentoring and Professional Development-II	-	-	2	-	02	100:0	Non-Credit	No Exam
SEC	9	UC/BARCH-409/19	Constitutional Law	2	-	-	-	02	40:60	2	03
	10	———	*Education Tour II / Summer Training II /Vacation Assignment II	-	-	-	-	-	–	–	The evaluation will be done in 5th sem
			Total	13	4	4	8	29		26	

*NOTES: Educational Tour of 1-2 week duration during or after the II[nd] year of studies (as a measure drawing /Documentation Camp) should be undertaken and Summer Training/ Vacation assignment to be given based on UC/BARCH-408/19. The marking of the same will done in the fifth semester UC/BARCH-518/1

IK Gujral Punjab Technical University Kapurthala
Bachelor's of Architecture (B.Arch): Teaching Scheme 2019

New approved vide 21.1

Fifth Semester

Course Type	Sr. no	Course Code	Course Title	Load Allocations					Marks	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem/ Tut	P/F W	Stu	Total	Int : Ext		
PC	1	UC/BARCH-501/19	Architectural Design -V	1	-	-	5	06	60:40	6	12 (in 2 days) + External Viva Voce
BS &AE	2	UC/BARCH-502/19	Building Construction & Materials-V	1	-	-	3	04	60:40	4	03
	3	UC/BARCH-503/19	Structure Systems-III	1	1	-	-	02	60:40	2	External Viva Voce
	4	UC/BARCH-504/19	Structure Design-III	2	2	-	-	04	40:60	4	03
	5	UC/BARCH-505/19	Building Services-II	2	1	-	-	03	40:60	3	03
PAECC	6	UC/BARCH-506/19	Theory of Design-II	2	1	-	-	03	40:60	3	03
	7	UC/BARCH-507/19	Landscape Architecture	2	1	-	-	03	40:60	3	03
PE	8	UC/BARCH/ /508 (A) - 508 (E) /19	Elective- I / MooC	2	1	-	-	03	40:60	3	03
OE	9	UC/BARCH/ /509 (A) - 509 (E) /19	Open Elective- I /MooC	2	-	-	-	02	40:60	2	03
SEC	10	UC/BARCH-510/19	*Educational Tour II/ Summer Training-II/ Vacation Assignment-II	-	-	-	-	-	100	1	No Exam
			Total	15	7		8	30		31	

Note: * UC/BARCH-510/19 is carried out in the intervening period of 4th and 5th semester, the evaluation of report to be done in the 5th semester.

Elective- I (Choose any one from the given choices)

UC/BARCH/ /508 (A)	Green Buildings & Rating System
UC/BARCH/ /508 (B)	Hill Architecture
UC/BARCH/ /508 (C)	Emerging Technologies in Architecture
UC/BARCH/ /508 (D)	Product Design
UC/BARCH/ /508 (E)	Architecture Acoustics
UC/BARCH/PE/MOOC508(F - O)	(Ref MOOC Table)

Open Elective-I (Choose any one from the given choices)

UC/BARCH/ /509 (A)	Sociology for Architects / Fundamentals of Sociology
UC/BARCH/ /509 (B)	Health Education- I
UC/BARCH/ /509 (C)	Music (Vocal, Instrumental),
UC/BARCH/ /509 (D)	Laser/ Printing Technology
UC/BARCH/ /509 (E)	Creative Writing
	UC/BARCH/MOOC 509 (F - O) (Ref MOOC Table)

New Approval Vide 21-01-21

Sixth Semester

Course Type	Sr.no	Course Code	Course Title	Load Allocations					Marks	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem/ Tut	P/F W	Stu	Total	Int : Ext		
PC	1	UC/BARCH-601/19	Architectural Design -VI	1	-	-	5	06	60:40	6	12 (in 2 days) + External Viva Voce
	2	UC/BARCH-602/19	History of Architecture-IV	2	-	-	-	02	40:60	2	03
	3	UC/BARCH-603/19	Estimating Costing & Specifications	2	1	-	-	03	40:60	3	03
	4	UC/BARCH-604/19	Architecture Legislation	2	-	-	-	02	40:60	2	03
BS &AE	5	UC/BARCH-605/19	Building Construction & Materials-VI	1	-	-	3	04	60:40	4	03
	6	UC/BARCH-606/19	Structure Design (Project) -IV	1	-	-	3	04	40:60	4	03
	7	UC/BARCH-607/19	Building Services-III	2	-	-	-	02	40:60	2	03
PAECC	8	UC/BARCH-608/19	Climate & Architecture (Sustainable Design) -III	2	-	-	-	02	40:60	2	03
PE	9	UC/BARCH-609 (A) - 609 (E)/19	Elective- II	2	1	-	-	03	40:60	3	03
OE	10	UC/BARCH-610(A) - 610 (E)/19	Open Elective- II/Mooc Swayam	2	-	-	-	02	40:60	2	03
SEC	11	UC/BARCH-611/19	Mentoring and Professional Development-III	2	-	-	-	02	100	Non-Credit	No Exam
			Total	20	4		8	32		30	

Elective- II (Choose any one from the given choices)

UC/BARCH-609 (A)	Sustainable Cities & Communities
UC/BARCH-609 (B)	Vernacular / Rural / Indigenous Architecture/ Mud Arch
UC/BARCH-609 (C)	Architecture Conservation/ Restoration and Preservation
UC/BARCH-609 (D)	Furniture Design

Open Elective-II (Choose any one from the given choices)

UC/BARCH-610(A)	Psychology for Architects
UC/BARCH-610(B)	Health Education- II
UC/BARCH-610(C)	Dance forms (any form)
UC/BARCH-610(D)	Web designing Management

UC/BARCH-609 (E)	Lighting and Illumination/ Lighting Design	UC/BARCH-610(E)	Advanced HVAC & Design for Fire
UC/BARCH/PE/MOOC 609(F - O)	(Ref MOOC Table)	UC/BARCH/MOOC 610 (F - O) (Ref MOOC Table)	

5th Semester 2019

IK Gujral Punjab Technical University
Bachelors of Architecture
(Constituent Campus)

Jyoti 21-1-21

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 6	Duration of Exam
UC/BARCH-501/19	Architectural Design -V	1L, 5 Studio	Int : Ext -60:40	12 (in 2 days) + External Viva Voce

Course Objective: To make students understand and appreciate the constraints in the designing of buildings regarding function, form, and structure. To create awareness about the Role and Importance of physical factors in Architectural Design on flat or contour site.

Course Outcomes: At the end of the course, the students will able to understand the nuances of commercial and public buildings. They will also be well versed with various physical factors of architecture design and equipped with the norms of barrier-free design and design of building with respect to site topography.

Detailed Syllabus:-

Design of structures of simple and normal complexity and detailing of buildings. All buildings should have accessibility to specially-abled persons.

UNIT-I Commercial Buildings

Hotels, Motels, Restaurants, Hostels, Club Houses, etc.

UNIT-II Public buildings

Institution and Public Buildings- Museum, Libraries, and Court Houses, etc.

Evaluation Criteria for Exam / Question Paper Setting:-

One compulsory question is to be set from the entire syllabus. The answer sheet shall be retained at the institute after the exam for the conduct of the viva voce which will be conducted at the institute level by Internal / External jury members appointed in consultation with the university from the approved panelist of examiners. . The answer sheet shall be retained at the institute after the exam for the conduct of viva voce.

Instructions for the Faculty –

Design faculty are required to take a well prepared well-researched lecture on the building topology and should encourage and motivate the students for taking up live projects of their immediate surroundings (Identifying need, Framing requirements and solution for the same, and it should be evaluated as one of the assignment)It is recommended that 2-3 projects to be handled by students from the topic given above. Library and prototype studies should be carried out for the remaining projects. Model and perspective should be made an integral part of project presentation.

One project should be on a contoured side preferably.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 4	Duration of Exam
UC/BARCH-502/19	Building Construction & Materials-V	1, 3	Int : Ext -60:40	03

Course Objective: To make students understand and appreciate, various methods of building construction in coordination with the building materials and science related to them. Students will gain knowledge on the various applications of materials i.e. Iron/ Steel? Aluminium in buildings.

Course Outcomes: At the end of the course student will able to Become aware of the different types roofing systems and trusses. Understand details for trusses, staircases, sliding doors, partitions work out and apply appropriate details for building construction of the same.

Detailed Syllabus:-

PART – A BUILDING MATERIALS

UNIT-I

The study of manufacturing process, casting, characteristics, form and uses of Cast Iron, Wrought Iron, Steel, Stainless Steel, Aluminium, copper as building materials.

UNIT-II

Properties and applications of copper, titanium and carbon fibre in buildings.
Various structural members, Sections and Joinery in Steel, Aluminium and PVC.

PART – B BUILDING CONSTRUCTION

UNIT-III

a) **Steel, Aluminium, and PVC**

- Doors and windows
- Frames
- Sliding door

b) **Aluminum, and PVC**

- Partition Walls
- Aluminium composite panelling details
- Curtail wall details.

UNIT-IV

c) **Steel Trusses**

- Steel Trusses types, 12m. howe trusses
- Constructional details of Simple Truss, North Light Truss

d) Constructional details of Steel flooring, Steel, beams, Column (stanchions), Grillage Foundation & Staircase details.

Evaluation Criteria for Exam / Question Paper Setting:-

Total eight questions are to be set two from each unit & students are required to attempt total four questions i.e. one from each unit. The distribution of marks for **Part A** (Unit I&II): **Part B** (Unit III&IV) is 12: 28 marks.

Instructions for the Faculty –

All efforts must be directed to make the learning an enriching experience.

Market Survey to study complete range of products available in the market under different trade names with their manufacturing details, specifications and performance. Preparing Construction sheets on above topics.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH-503/19	Structure Systems-III	1, 1, -, -,	Int : Ext 60:40	Ext Viva Voce

Course Objectives: At the end of the course, the students will able to understand the concept of High rise, Long span, shell, flat slabs, tensile and pneumatic structures and the structural and construction issues involved with each type of structure.

Course Outcome: After completing this course, the student will be able to: Understand the basic principles of structures. Realize the fundamental requirements of long span structures Understand the architectural features and necessity of shells and plate structures Comprehend the design principles and applications of pneumatic and tensile structures

Detailed Syllabus:-

UNIT-I
Recapitulation of what has been done in pervious semester.

UNIT-II

Form Active Structural System or Structural System in Simple Stress Conditions:

- Cable Structures (Roofs, Bridges etc.)
- Tents Structures

UNIT-III
Surface active Structure System:

- Shells.
- Folded Plates.

UNIT-IV
Vertical Structure System for High Rise Buildings.

Evaluation Criteria for Exam / Question Paper Setting:-

Evaluation is through External Viva Voice of the work done by the student during the semester

Instructions for the Faculty –

Emphasis must be given on learning by doing i.e. preparing the models of the structure system covered. Students be encourage to present a PPT on the topics assigned and submit its report for external evaluation.

Core References:
The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

Jyoti Prashant

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 4	Duration of Exam
UC/BARCH-504/19	Structure Design-III	2L, 2 Tut	Int : Ext -40:60	03

Course Objective

The aim and objective of the course on Structure Design- III is to make students aware about the design methodology adopted and principals involved in designing the structural elements used in the built environment with focus on steel.

Course Outcomes: At the end of the course, the students will able to –

Design Beams, Compression members, trusses for different conditions by applying code provisions along with the knowledge of Riveted and welded joints

Detailed Syllabus:

UNIT I

COMPRESSION MEMBER

Design of Compression members subjected to axial loading involving: Effective length, Radius of gyration, Slenderness ratio, Permissible Stresses

UNIT II

STEEL BEAM

Design of Steel Beams and Sections on the basis of: Bending Stress, Shear Check

UNIT III

STEEL TRUSS

Design of Steel Truss Members for Given Loading, Compressive and Tensile Forces

UNIT IV

RIVETED/WELDED JOINTS

Riveted Connections: Different types of Rivets, Type of Riveted Joints, Failure of Riveted Joints, Efficiency of Riveted Joint

Welded Connections: Different types of Welds, Advantages/Disadvantage of Welded/ Riveted connections

Evaluation Criteria for Exam / Question Paper Setting:-
The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.
The question bank will be submitted to university within one month of commencement of semester.
Instructions for the Faculty –
Focus on the live study and application of the subject into the architecture design.
Core References:
The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-505/19	Building Services-II	2, 1, -, -,	Int : Ext -40:60	03

Course Objective: To make students learn and understand the requirements of Building Services and their application to buildings with focus on Electrical, lighting, fire and mechanical circulation.

Course Outcomes: At the end of the course, the students will able to:

- Understand the terminology and basic principles MEP Services
- Develop design skills for MEP layouts in architecture design

Detailed Syllabus:-

UNIT- I

ELECTRICAL SERVICES

- Electricity- Ohm's , Kirchhoff's Laws and basic Principles.
- Electric Circuits-- Series and Parallel.
- Domestic installations- Water heater, Radiator etc.
- Wires- Specifications /Carrying capacity , Electrical loads.
- Types of Switches, Sockets and Fixtures.
- Distribution Boards, Circuit Breakers, Fuses, Electrical Meters and their layout.
- Design considerations for Electrical Installations from generation to distribution(Energy Flow Diagram).
- Protection against Overload, Short circuit, Earth fault, Lightening and other safety measures for buildings.
- Wiring systems- Materials, Types/Methods of wiring

UNIT-II

ILLUMINATION

- Light - Propagation, Reflection, Radiation, Transmission and Absorption.
- Illumination –Laws, Measurement, Luminous Intensity, Brightness, Luminance Flux, Glare and their effect. Etc.
- Illumination Schemes- Types and their design considerations.
- Light Flux method for calculation of number of lamps for illumination.
- Lamps-Incandescent, Sodium Vapour, Mercury Vapour, Fluorescent and Neon lamps etc.
- Types of Luminaries for interior and exterior lighting.
- Residential, commercial, industry, flood and street lighting.
- Testing before commissioning of electrical services.

UNIT-III: FIRE SAFETY

- Fire—Causes, Spread, Combustibility of Materials and Safety Norms.
- Fire Detection/Warning- Equipment including Smoke Detectors, Monitoring Devices, Alarm Systems. Etc.
- Fire Fighting— Planning, Designing, Installations, Equipment, Operation and Maintenance.
- Design Criteria for Fire Exit and Escapes in High Rise Buildings.

UNIT-IV- MECHANICAL CIRCULATION

- Lifts-Types, Control and Operation, Carrying Capacity, Rated Load, Rated Speed,
- Lift - Sections, Machine Room, Components, Lift Well and Lift Pit.
- Design Standards - Lifts Lobby, Lift Cars etc
- Escalators and Conveyors- Installation and Planning Requirements

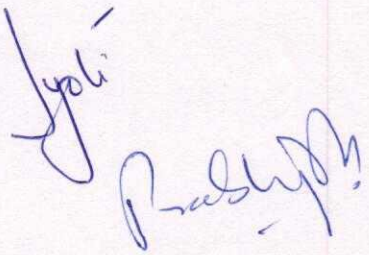
Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.
The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Market survey to study and products available. Subject shall be taught through the combination of Guest Lectures, Field visits, Visits to the Project Sites.
Exercises shall be clubbed with Design Studio Project

Core References:
The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.



IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-506/19	Theory of Design-III	2, 1, -, -,	Int : Ext -40:60	03

Course Objective: To make students learn and understand the To make students drive deeper into the Architecture problems and look for directive principles guiding the philosophy of design used by masters of modern Architecture and to assess their contribution by their own criteria.

Course Outcomes: At the end of the course, the students will able to understand, appreciate and learn the design principles, philosophy of design used by masters of modern architects.

Detailed Syllabus:-

UNIT- I

FOREIGN ARCHITECTS

1.Louis I.Kahn
2.Eero Sarinen
3.Philip Johnson

UNIT- II

4.Paul Rudolph
5.John Utzon
6.Kenzo Tange
7. Laurie Baker

UNIT- III

INDIAN ARCHITECTS

A.P.Kanvinde
C.M. Correa
B.V.Doshi

UNIT- IV

J.A.Stein
U.C.Jain
Raj Rewal

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.
The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the study and application of the subject into the architecture design. The faculty must also try to cover the emerging contemporary architects to strengthen the students knowledge base.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-507/19	Landscape Architecture	2, 1, -, -,	Int : Ext -40:60	03

Course Objective: To make students understand the elements of Landscape Design and its application in Architectural Design solutions.

Course Outcomes: At the end of the course, the students will able to understand and appreciate the elements, principle and need of design and apply the same in landscape design solutions.

Detailed Syllabus:-

UNIT- I

- Introduction to Landscape Architecture.
- Elements of Landscape design and its relation to the built environment
- Plant characteristics, plant propagation and impact of climate, soil and manure.

UNIT- II

- Structure, Colour, Form, Foliage of various types of Trees, Shrubs, Cacti Bushes and Creepers etc.
- Identification and study of a few Indian plants and trees.

UNIT- III

Study on comparative basis of development of landscape design through history:

- Indian Gardens
- Persian Gardens
- Mogul Gardens
- Japanese Gardens

UNIT- IV

- Italian Gardens
- French Gardens
- English Gardens

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Faculty may introduce a landscape design problem as a part of assignment. Focus on the live study and application of the subject into the architecture design. Faculty must also touch upon the garden/ landscapes of other countries/ region of the world.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH/ /508 (A)/19	Green Buildings & Rating System	2, 1, -, -,	Int : Ext -40:60	03

Course Objective: To acquaint the students and make them aware of the concept of green buildings and rating systems as a significant determinant of built forms and to familiarize them with aspects.
Course Outcomes: At the end of the course, the students will able to Understand Green buildings and their rating systems.
Detailed Syllabus:-

UNIT- I

- Understand energy, sources of energy and reserves of the conventional and non-conventional energy resources.
- Energy conservation and related Acts prevailing in the country, Energy star rating of the buildings and Equipment.
- Building as consumer of energy – definitions, need , importance of green buildings, difference between green and conventional buildings.
- Introduction to building rating system in India LEED, BEE, GRIHA, IGBC, ECBC

UNIT- II

- Study of ECBC rating system w.r.t passive design techniques, orientation, form shading, cool roofs, fenestration day lighting etc.
- Artificial lighting/ energy consumptions in buildings energy management system.

UNIT- III

- Various rating systems around the world.
- Case study of National and International Examples of rated buildings

UNIT- IV

- Application of learning in Architecture design studio.

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.
The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design.

Core References:
The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH/ /508 (B)/19	Hill Architecture	2, 1, -, -,	Int : Ext -40:60	03

Course Objective: To make students aware and understand the specific requirements of art and science of designing buildings in hill areas based on climate, topography, local materials, social factors etc.

Course Outcomes: At the end of the course, the students will able to design on a hill and on contour site.

Detailed Syllabus:-

UNIT- I

- Hill Architecture- Introduction, historical perspective, specific attributes/unique features etc.
- Traditional Hill Architecture of Medieval Europe- overview , specific features, building materials, building technologies

UNIT- II

- Hill Settlements-Approach, overview ,specific features of planning and designing in different climatic regions of the world
- Disasters in Hill Areas: - Issues and Options.

UNIT- III

- Hill Architecture in India- Growth, Development, Character and unique features
- Building Typologies- Study of various types of traditional buildings in different Hill Regions of India with their unique features
- Factors effecting design of buildings in Hill Areas- Topography, Climate, Vegetation, Materials, Technology, Sustainability Social factors etc- their role and importance

UNIT- IV

- Building Technologies- Study of different technologies for construction of Foundations, Walls. Floors, Roof etc in Hill Regions of India
- Study of Traditional Hill Settlements in India with their planning features
- Hill Architecture in Post- independence Period- Approach, Pattern, Typical features, Materials, Technologies etc and their impact on ecology, environment and Sustainability of Hill Areas

Evaluation Criteria for Exam / Question Paper Setting:-
The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.
The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Instructions To Faculty

Focus on the live study and application of the subject into the architecture design. Faculty may introduce a small design problem separately as hill architecture assignment.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH/ /508 (C)/19	Emerging Technologies in Architecture	2, 1, -, -,	Int : Ext -40:60	03

Course Objective: To make students aware of the latest emerging trends and technologies and their application to different aspects of architecture such as design, construction, building services and material selection and application.

Course Outcomes: At the end of the course, the students will able to:

- Understand use of various emerging technologies and their application in Architectural Design and Construction.
- Know about technical advances and advantages of computational technologies through the use of computer modelling, rendering and digital fabrication, with focus on the exploration of space and place making through the use of computer modelling and design construction.
- Have an understanding of Building Automation for building types and their applicability to different building services

Detailed Syllabus:-

UNIT- I (DIGITAL ARCHITECTURE)

Basic introduction to the use of computer applications in the field of Architecture and Building Design and construction, concepts of visualization, like 3D modelling, parametric modelling, animation and digital fabrication. Use of building performance simulation modelling for designing energy efficient buildings through use of different softwares such as ecotect etc. Introduction to Design-data management tools such as Revit, ArchiCAD etc and parametric design tools such as Rhino and Grasshopper etc.

UNIT- II (SERVICES & CONTROL TECHNOLOGIES)

Detail study of Building Automation for building types like residential complexes, commercial & public buildings, specialized buildings etc.

Applicability of systems and specialized devices for/in HVAC, Emergency services, Water supply, Security, Day today applications and Building maintenance

Introduction to Automation software tools, such as Energy plus, E-quest etc

UNIT- III (INFORMATION SYSTEMS)

Introduction of Geographic Information Systems and various tools available, uses of GIS in different fields, etc. Mapping and Geographic Information Systems tools, such as ArcView Management Information Systems: Introduction of MIS and its uses in the building industry, for example in construction management, data management, etc. Management Information Systems tools, such as MS projects, MS VISIO

UNIT- IV (MATERIALS TECHNOLOGY)

Wood: Structure and properties of Renewability issues hardwoods and softwoods Bending and laminating wood Manufactured boards Processing - shaping, forming and joining Protecting and finishing wood Metals: Standard sizes and sections Protecting and finishing metals Plastics: Types, properties and characteristics Molecular structure in plastics Shaping, joining and finishing Pigmentation of plastics Durability and cost Ceramics: Design principles for Environmental issues associated moulding concrete with the manufacture and disposal of materials Composite Materials: Types, properties and applications

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Market survey to study materials available. Subject shall be taught through the combination of Guest Lectures, Field visits, Visits to the Project Sites

Exercises shall be clubbed with Design Studio Project

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH/ /508 (D)/19	Product Design	2, 1, -, -,	Int : Ext -40:60	03

Course Objective: To expose the students to the requirements of designing for the human comfort in accordance with anthropometry. The students will have knowledge of ergonomics and its applications in Product design including designing for the physically challenged and the elderly

Course Outcomes: At the end of the course, the students will able to gain knowledge of product design.

Detailed Syllabus:-

UNIT- I

INTRODUCTION - Human being in the manmade world and importance of ergonomics, Gross human anatomy, Ergonomics for children and old people, Definitions related to Ergonomics and Product design, Historical development in the concept of ergonomics and product design, Role of Product designer.

UNIT- II

ERGONOMICS AND DESIGN - Application of human factors data. Human activities, their nature and effects, Man-machine interaction and physical environment - Environmental Condition including, thermal, illumination and noise. Applied anthropometry – Human response to climate, Human performance and system reliability, designer's priorities.

UNIT- III

ASPECTS OF PRODUCT DESIGN - Visual, Auditory, Tactual, Olfactory human mechanisms, Physical space and arrangement. Product display, process of seeing, visual discrimination, quantitative and qualitative visual display, Alphanumeric and related displays, Visual codes and symbols. Processes of product designing, manufacturing and testing Form, Colour, Symbols, User specific criteria, Material selections, Technology and recyclability, Packaging. Multiple Utility oriented approach to Product Design.

UNIT- IV

UNIVERSAL DESIGN - Design of special elements in buildings for physically challenged and old aged - Design of Household elements, tools and devices. - Design of furniture. - Design of Industrial Product – Automobiles and Electrical - Element design for differently abled, old and children.

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Teaching in the subject shall be made a combination of guest lectures by Experts, seminars. Focus on the live study and application of the subject into the architecture design.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH/ /508 (E)/19	Architecture Acoustics	2, 1, -, -,	Int : Ext - 40:60	03

Course Objective: To understand the behaviour of sound in an enclosed space and remedial measures for controlling unwanted noise, towards creating the most favourable conditions for indoor and outdoor acoustic environment.

Course Outcomes: At the end of the course, the students will able to understand the concept on architecture acoustics.

Detailed Syllabus:-

UNIT- I

-Nature of Sound: Sound Waves, Sound Levels- Power, Intensity and Pressure, Auditory Range - thresholds of hearing & pain, Decibel scale, Sound Effects on Human; Incidence of Sound-reflection, absorption & transmission; Noise, Sound in Open Air effects of wind flow & temperature gradients, acoustic shadow ; Sound in Enclosed Space-air-borne & structure borne (impact) sound, direct & reverberant components, reverberation time using Sabine's formula (dead & live room), echo, resonance.

UNIT- II

Environmental Acoustics: Various Noise Sources, Planning Against Noise-zoning, distancing & screening, green belts & landscaping, noise barriers, Outdoor Noise Regulations in India, Open-air Auditorium.

UNIT- III

General Building Acoustics: Acceptable Indoor Noise Levels, Transmission Loss and insulation against air-borne sound, Various Sound Absorbents, Reduction of Noise, Noise isolators in Construction-hollow & composite wall, resilient surface materials, floating floor construction for concrete & wooden floors, suspended ceiling, Acoustic treatment of skirting, windows & ventilators.

UNIT- IV

Residential Buildings: Sources of Noise and Recommendations- site planning, internal planning, sound insulation.

Educational Buildings: Sources of Noise and Recommendations- site planning, internal planning, noise reduction within rooms, sound insulation.

Auditoria and Theatres: Sources of Noise- outdoor and indoor, Recommendations- geometry & shape, seating arrangement, design criteria for different purposes; Electro-acoustic installations

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Market survey to study materials available. Subject shall be taught through the combination of Guest Lectures, Field visits, Visits to the Project Sites

Exercises shall be clubbed with Design Studio Project

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH/ /509 (A)/19	Sociology for Architects / Fundamentals of Sociology	2L,	Int : Ext -40:60	03

Course Objective: To make students learn and understand the To make students drive deeper into the Architecture problems and look for directive principles guiding the philosophy of design used by masters of modern Architecture and to assess their contribution by their own criteria.

Course Outcomes: At the end of the course, the students will able to the aspects of sociology for architects and its fundamentals.

Detailed Syllabus:-

UNIT- I

Sociology: Definition and Subject matter, Nature and Scope, Emergence of Sociology, Sociology and its relationship with Anthropology, Political Science, Economics, and History

UNIT- II

Basic Concepts: Society, Culture, Community, Institutions, Association, Social Structure, Status and Role, Norms and Values, Folkways and Mores

UNIT- III

Individual and Society : Individual and society, Socialization, Stages and agencies of Socialization, Development of Self – contributions of George Herbert Mead, C.H. Cooley's Looking Glass Self The Concept of Group : Types of Groups – Primary and Secondary groups, In-Group and Out-group, Reference Group

UNIT- IV

Social Stratification: Caste, Class, Power, Gender and Race. Theories of Stratification – Functionalist, Marxist, Weberian. Social mobility and its determinants.

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH/ /509 (B)/19	Health Education- I	2L	Int : Ext -40:60	03

Course Objective: Health Education provides every student an opportunity to gain new and useful information related to daily living, self-esteem, family and community living. The course is divided into two major segments. The first segment is a general overview of mental and social health. The second segment covers a variety of topics including anatomy, problems of aging, environmental and political issues in health, sex education, AIDS education, alcohol, tobacco and other drugs (ATOD), diseases, first aid, and nutrition.

Course Outcomes: At the end of the course, the students will able understand the importance of health education.

Detailed Syllabus:-

UNIT- I - Mental and Social Health

- Making healthy decisions
- Personality, self-esteem, and emotions
- Managing stress
- Mental disorders and suicide
- Family relationships
- Preventing violence

UNIT- II - Alcohol, Tobacco, and Other Drugs (ATOD)

Alcohol's effects on the body

- Long-term risks of alcohol
- Teens and tobacco
- Risks of tobacco use
- Legal and illegal drugs
- Preventing drug abuse

UNIT- III – Nutrition

- Food and nutrition
- Guidelines for healthy eating
- Making healthy food choices
- Safely managing your weight
- Nutrition for individual needs
- Keeping your digestive system healthy

UNIT- IV - Family Life and Human Sexuality

- Reproductive Anatomy

- HIV, STDs, and Pregnancy
- Contraception
- Negotiation and Refusal Skills
- Healthy Relationships

Evaluation Criteria for Exam / Question Paper Setting:-

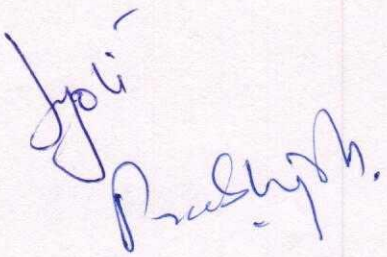
The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.
The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Subject shall be taught through the combination of Guest Lectures, expert lectures or seminars.
Exercises shall be clubbed with Design Studio Project

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.



IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH/ /509 (C)/19	Music (Vocal, Instrumental),	2L	Int : Ext -40:60	03

Course Objective: To make students learn and understand the music.

Course Outcomes: At the end of the course, the students will able to relate music with architecture and distinguish between good not so good music.

Detailed Syllabus:-

UNIT- I
Study of following Rãgas: 1.Durga 2.Jaunpuri 3.Bihag 4.Desh

UNIT- II
Vocal Music 4 Drut Khyãl in all Rãgas. 5.Swarmallika in any one Rãgas 6.Lakshangeet in any One Raga

UNIT- III
Instrumental Music 7.Different bols patterns in Rãgas. 8.Razakhani gat in Raga Kedar/Bihag/Jaunpuri. 9..Basic technique of Jhala Playing.

UNIT- IV
10.Ability to recite the following Thekas with Tali & Kali a) Chartaal b) Ektaal 11.Basic knowledge of Playing alankaar in Harmonium Vocal - Playing of Tanpura is compulsory

Evaluation Criteria for Exam / Question Paper Setting:-
The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.
The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Subject shall be taught through the combination of Guest Lectures, expert lectures or seminars.
Exercises shall be clubbed with Design Studio Project

Core References:
The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH/ /509 (D)/19	Laser/ Printing Technology	2L	Int : Ext -40:60	3

Course Objective: The objective of this course is to impart the basis knowledge of different printing processes along with their role, importance and applications.

Course Outcomes: The learning outcome of this course is expected that after completion of this course the students will be having the detail knowledge of various printing processes and the recent development in this industry and they will implement their knowledge for print production operations.

Detailed Syllabus:-

UNIT- I
Historical development in Printing Technology. Recent trends in the field of printing and allied technologies.
Pre-Press, Press and Post press operations

UNIT- II
Letterpress Printing Process; Characteristics, role, importance and applications.
Offset Printing Process; Characteristics, role, importance and applications.

UNIT- III
Flexography Printing Process; Characteristics, role, importance and applications.
Gravure Printing Process; Characteristics, role, importance and applications.

UNIT- IV
Screen Printing Process; Characteristics, role, importance and applications.
Digital Printing Process; Characteristics, role, importance and applications.

Evaluation Criteria for Exam / Question Paper Setting:-
The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.
The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –
Subject shall be taught through the combination of Guest Lectures, expert lectures or seminars.
Exercises shall be clubbed with Design Studio Project

Core References:
The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH/ /509 (E)/19	Creative Writing	2L	Int : Ext -40:60	3

Course Objective: This course will focus on expressive writing in many different forms. Students will have the opportunity to explore several different types of poetry and prose styles, as well as responding to literature, art mediums, quotes, and music. Originality and writing that shows thought will be emphasized. Strategies to avoid writer's block and new ways to uncover ideas for writing will be studied.

Course Outcomes: in Creative Writing will write poems, short stories, plays, news stories, comic strips, children's books, an autobiography and other types of writing that express creativity. Students will also study writing samples from professional writers

Detailed Syllabus:-

UNIT- I

Characteristics of Good Writing prose & Poetry Figurative Language Imagery Sensory Details Point of View Rhyme Repetition Parallelism Short Story Theme

UNIT- II

Word Choice Precise language Poetic Forms Adventure Story Character, Setting, Plot Style Playwriting

UNIT- III

Humor Using Structure to Reflect Theme Art, Music as Inspiration for Poetry Descriptive Writing Persuasive Writing—Commercial News Story Memoir—Reflective Writing Methodology

UNIT- IV

Autobiography Children's Books Action in Story Writing Paint-Write Project Anthology Fable Fairy Tale review writing, precis, summary, abstract and paper writing

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.
The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

All offsets must be directed towards narrative writing. Students should be encouraged irrespective of the genre, topic, style. Focus on enhancement of creative and artistic expression should be there.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 5th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits	Duration of Exam
UC/BARCH-510/19	Educational Tour II/ Summer Training-II/Vacation Assignment-II		1	

The education tour to one day to one or two week duration be encouraged to be undertaken by the students under faculty supervision . During or after the semester the term report shall be submitted to the class coordinator for assessment.

The students be encourage to undertake approx. 04 week summer training in a design / construction office. alternatively student should also be encouraged to do any online course of similar duration during the summer vacation.

Vacation assignment are be assign by the HoD in consultation with class coordinator before the commencement of the vacation and submitted in the following semester to the class coordinator for assessment.

6th Semester 2019

IK Gujral Punjab Technical University
Bachelors of Architecture
(Constituent Campus)

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IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 6	Duration of Exam
UC/BARCH-601/19	Architectural Design -VI	1, - , - , 5	Int : Ext - 60:40	12 (in 2 days) + External Viva Voce

Course Objective: To make students understand and appreciate the constraints in the designing of a building, the principles and approach to the designing of complexes in the context of urban design, environmental components and urban services.

Course Outcomes: At the end of the course, nature of urban complexes, scale and other elements of urban design to be incorporated. They will also be well versed with various physical factors of architecture design and equipped with the norms of barrier free design & large span Column free structures.

Detailed Syllabus:-

UNIT-I

Auditorium, Cinemas, Theatres, Multiplex.

UNIT-II

Specialized Housing EWS, LIG, MIG and HIG
Study of an urban complex as a prototype so as to have a basic knowledge of various aspects in planning with focus on urban activity, services and construction methods along with social aspects, growth and change.

Evaluation Criteria for Exam / Question Paper Setting:-

One compulsory question is to be set from the entire syllabus. The answer sheet shall be retained at the institute after the exam for conduct of the viva voce which will be conducted at the institute level by Internal / External jury members appointed in consultation with the university from the approved panel list of examiners. . The answer sheet shall be retained at the institute after the exam for the conduct of viva voce.

Instructions for the Faculty –

Design faculty is required to take a well prepared well researched lecture on the building topology and should encourage and motivate the students for taking up live projects of their immediate surroundings (Identifying need, Framing requirements and solution for the same, and it should be evaluated as one of the assignment)It is recommended that 2-3 projects to be handled by students from the topic given above. Library and prototype studies should be carried out for remaining projects. Model and perspective should be made essential part of project presentation.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH-602/19	History of Architecture-IV	2L	Int : Ext - 40:60	03

Course Objective

To appreciate the constraints in the Architectural design of an ancient building with reference to its function, form and structures. To make student understand how different Architectural solutions were evolved(in successive historic periods)within the limitation imposed by prevalent social and religious customs, available building materials, climate of region/topography, complex structural problems and the limited technology available at that time period.

Course Outcomes: At the end of the course, the students will be able to –

- Develop a holistic approach to architecture s an integral component of the built environment.
- Develop an understanding of architecture as an outcome of various social, political and economic influences and as a response to the cultural and climate conditions.
- Understand the physical experience of buildings in order to appreciate the complexity of the physical and metaphysical influences bearing on architecture

UNIT-I

- Gothic Architecture
- Renaissance Architecture- Origin, growth and development in Europe

UNIT-II

- Mannerism - Basic contents and its impact on the development of Architecture
- Baroque & Rococo style.

UNIT-III

- Architecture of Imperial or Delhi style under various rulers.
- Architecture of Provincial Styles

UNIT-IV

- Architecture of Mogul period
- Mughal Architecture buildings

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.
The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

All efforts must be directed to make the learning an enriching experience. Subject shall be taught through the combination of Guest Lectures, Field visits, Visits to the Project Sites. Focus on the live study and application of the subject into the architecture design.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-603/19	Estimating Costing & Specifications- I	2, 1, -, -,	Int : Ext - 40:60	03

Course Objective: To make students understand the factors affecting cost of buildings and methods of preparing estimates of architectural projects.

Course Outcomes: At the end of the course, the students will able to prepare detailed estimates and cost of two-storeyed residential buildings in masonry and reinforced cement concrete.

Detailed Syllabus: -

UNIT- I

- Estimate & Types of Estimate.
- Methods of Estimates--Approximate & detailed methods of Estimate including Plinth area method, Carpet/Floor Area method, Cubic Content method.

UNIT- II

- Preparing estimates of quantities of materials for various items of work e.g. earthwork, brickwork, flooring, roofing etc- units of measurements and payments.
- Analysis of rates of material and labour required for various items of work.
- Bill of Quantities-Methods of taking out the quantities of R.C.C. construction.

UNIT- III

- Case study/practical exercise in preparing a detailed estimate of a two storeyed residential building with respect to the quantities of material and labour required as well as analysis of rates for material and labour.
- Introduction, importance, Role, Functions and Types of Specifications
- Detailed Specifications for various basic building materials

UNIT- IV

- Writing specifications for civil works as:-
  - Damp Proof Course
  - Brick Masonry
  - Concreting
  - Flooring
  - Plastering & Pointing
  - Timber Doors & Windows
  - Steel Doors & Windows
  - Painting and Varnishing
  - Services, Sanitary Fixtures & Electric Wiring

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

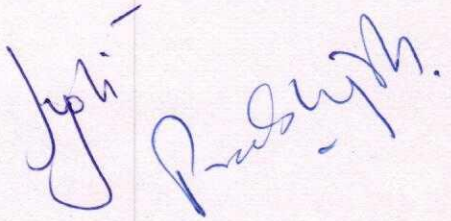
The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

All efforts must be directed to make the learning an enriching experience. Subject shall be taught through the combination of Guest Lectures, Field visits, Visits to the Project Sites. Focus on the live study and application of the subject into the architecture design.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.



IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH-604/19	Architecture Legislation - I	2L	Int : Ext - 40:60	03

Course Objective: To make students understand students familiar with the role and importance of Legal Framework in Designing the Built Environment and Promoting orderly growth of Human Settlements

Course Outcomes: At the end of the course, the students will able to understand need for building byelaws, importance of legislation in building industries ana NBC norms.

Detailed Syllabus:-

UNIT- I

- Need, Role and Importance of Legislation in the Building Industry
- Building Bye- laws-- Contents and Scope
- Study of Building Bye- laws Chandigarh- Intent and Contents
- Study of Building Bye- laws ,PUDA- Intent and Contents

UNIT- II

- Study of Municipal Building Bye- laws - Intent and Contents
- Architectural Controls- Need, Typology, Contents and Applicability
- Introduction to various Acts- Periphery Control, Property Regulation Act, Regional and Town Planning Act, Chandigarh Capital Act, Heritage Conservation Act.

UNIT- III

- Requirements of Submission of Documents/ Drawings for approval of Building Plans in Chandigarh, PUDA, Local Bodies
- Completion/ Occupation Certificate for Buildings- Need and Procedure
- Preservation and Conservation of Heritage Buildings, Heritage Regulations

UNIT- IV

- National Building Code, - Study of Important Definitions , Types of Buildings,
- Protection of Industrial/ Multi-Storeyed Buildings against Fire etc w.r.t. National Building Code
- Disability Act

Evaluation Criteria for Exam / Question Paper Setting:-
The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.
The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –
Focus on the live study and application of the subject into the architecture design.
Core References:
The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 4	Duration of Exam
UC/BARCH-605/19	Building Construction & Materials-VI	1, 3Studio	Int : Ext - 60:40	03

Course Objective: To make students understand and appreciate, various methods of building construction in coordination with the building materials and science related to them. Students will gain knowledge on the various applications of materials in Interior project and its detailing.

Course Outcomes: At the end of the course student will able to Become aware overall intent is to make students understand construction/detailing of work associated with interior finishes and works.

Detailed Syllabus:-

UNIT-I

Complete working drawings of a residential building including Site plan, Floor plans, Elevations, Sections, and Services showing-

- Constructional details of Kitchen
- Constructional details of Toilets
- Built in Furniture (Cup boards etc.)
- Staircase
- Joinery details

UNIT-II

Temporary construction work

- Shoring
- Underpinning
- Scaffolding

Evaluation Criteria for Exam / Question Paper Setting:-

- Two questions are to be set from each Unit.
- Students are required to attempt Three Questions with One question from each Unit.

Instructions for the Faculty –

All efforts must be directed to make the learning an enriching experience.

Market Survey to study complete range of products available in the market under different trade names with their manufacturing details, specifications and performance. Field visit to study the complete process of lying of reinforcement and concreting. Preparing Construction sheets on above topics. Emphasis shall be laid on understating of complete construction details of Double Storeyed structure.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 4	Duration of Exam
UC/BARCH-606/19	Structure Design (Project) -IV	1, 3, -, -,	Int : Ext - 40:60	03

Course Objective: To create skill among students to apply the knowledge gained regarding structural design in an applied project and to make buildings safe against natural/ manmade disasters

Course Outcomes: At the end of the course student will able to Become aware overall intent is to make students understand construction/detailing of work associated with interior finishes and works.

Detailed Syllabus:-

UNIT-I

Detailed Structural Design & Drawings of a Public /Residential Building, (R.C.C. frame structure) with emphasis laid on practical design considerations.

UNIT-II

Earth quake Resistant Design.
Introduction to Codal provision, IS- 4326 and IS- 1893 for Earth quake Resistant Design of Buildings.

UNIT-III

Earth quake Resistant provisions for Brick Masonry& R.C.C. Buildings.

UNIT-IV

Project based on pervious Unit

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.
The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design.

Core References:
The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH-607/19	Building Services-III	2L	Int : Ext - 40:60	03

Course Objective: To make students learn and understand basic principles governing design/provision of HVAC, Building Management System and Acoustics within the buildings

Course Outcomes: At the end of the course, the students will able to :

1. Know about the working principles of the building.
2. Understand the role of services and would be able to design appropriate space, location for it.
3. Know about the acoustics materials where, how and why we are using these materials.
4. Understand the importance of intelligent buildings.

Detailed Syllabus:-

UNIT- I

AIR CONDITIONING

- Air conditioning--Role, Importance and Principles governing Air conditioning
- Refrigeration Cycle, Air cycle, Cooling Load
- Methods of Cooling and Heating-Evaporative Cooling etc
- Types of Air Conditioning Systems-Unit and Central
- Standards and location of various parts- Plant, Ductwork, Fan ,Filters, Outlets, Dampers etc
- Natural and Artificial Ventilation

UNIT- II

ACOUSTICS

- Acoustics- Introduction, Role, Importance, Concept, Basic Principles of Design,
- Sound- Basic principles governing transmission, reverberation, absorption, reflection etc.
- Acoustics-Materials- application, advantages and disadvantages
- Acoustics in Buildings- Design considerations for various buildings including Class Room, Studio, Lecture Theatre, Auditorium, OAT etc

UNIT- III

BUILDING AUTOMATION/BUILDING MANAGEMENT SYSTEM

- Building Automation-Introduction, Relevance, Scope and Importance
- Building Management System- Functions, Applicability to different services
- Building Management System- Limitations, Advantages, Disadvantages components and integration in buildings

UNIT- IV

INTELLIGENT BUILDINGS

- Intelligent Buildings- Concept, applicability and limitations

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.
The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Subject shall be taught through the combination of Guest Lectures, Field visits, Visits to the Project Sites. Focus on the live study and application of the subject into the architecture design.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH-608/19	Climate & Architecture (Sustainable Design) -III	2L	Int : Ext - 40:60	03

Course Objective: To educate and make students aware about sustainability issues, need and importance of promoting sustainable Architecture.

Course Outcomes: At the end of the course student will able to Become aware overall intent is to make students aware of sustainable development , need and principle.

Detailed Syllabus:-

UNIT-I

- **Sustainable Development-** Introduction, definitions, objectives and scope
- **Man and Environment**- Introduction, issues and options
- **Human Settlements**- Planning, Growth, Development, Problems
- **Global warming –** Introduction, Causes, Effects and Remedies, Carbon Credits.
- Architect-**Role in Sustainable Development.**

UNIT-II

- Energy - **Role, Importance in buildings**
- Sources of Energy- **Non- renewable and renewable – Role and Importance**
- **Sustainable Materials –** Production and use
- **Quality of indoor/outdoor environment**

UNIT-III

- **Sustainable Design** – Concept, Objectives, Principles, Approach to Sustainable design
- **Built Environment**- Sustainable Construction, Ecological Buildings, Green Building

UNIT-IV

- Building Rating System
- ECBC Code
- Sustainability Assessment - LEED, Life Cycle Assessment, GRIHA
- Climate responsive and Solar Passive Strategies in Indian Climates
- Recycling/Reuse
- India's approach to sustainable Development.

Evaluation Criteria for Exam / Question Paper Setting:-

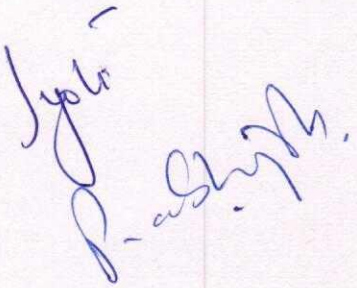
The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.
The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Subject shall be taught through the combination of Guest Lectures, Field visits, Visits to the Project Sites. Focus on the live study and application of the subject into the architecture design.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.



IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-609 (A)/19	Sustainable Cities & Communities	2L, 1T	Int : Ext 40:60	03

Course Objective: To educate and make students aware about sustainability issues, need and importance of promoting sustainable Architecture. This course looks at pragmatic action in the face of three huge global trends

Course Outcomes: At the end of the course student will able to Become aware overall intent is to make students understand The course also takes a "built environment" approach. This is not the only way to understand cities! But it is useful since it looks at components of cities: the physical structures like roads, transit, buildings and more that are needed to support other attributes like jobs, schools, housing, and hospitals.

Detailed Syllabus:-

UNIT-I

Introduction and Orientation, Expectations Ground rules and Guidelines

UNIT-II

Principles Theories, Frameworks, Definitions, Practices Tools, Techniques, Metrics

UNIT-III

Transportation, Housing and Construction, Green Design and Architecture

UNIT-IV

The Future(s) of Sustainability, Megaprojects and Cities

Evaluation Criteria for Exam / Question Paper Setting:-
The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.
The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design.

Core References:
The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-609 (B)/19	Vernacular / Rural / Indigenous Architecture/ Mud Arch	2L, 1T	Int : Ext 40:60	03

Course Objective: The subject looks at specific vernacular architectural communities of India. Identifies and interprets specific local, regional, and national vernacular traditions from India. Develops a broader sense of understanding of the relationship between architecture, environment and culture

Course Outcomes: At the end of the course student will able to Become aware overall intent is to make students understand construction/detailing of work associated with interior finishes and works.

Detailed Syllabus:-

UNIT-I
Introduction to the field of Vernacular Architecture, traditional architecture

UNIT-II
Vernacular Architecture in the eastern, northern eastern India

UNIT-III
Vernacular Architecture of northern and western India

UNIT-IV
Vernacular Architecture of the Southern India & central India.

Evaluation Criteria for Exam / Question Paper Setting:-
The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.
The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design.

Core References:
The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-609 (C)/19	Architecture Conservation/ Restoration and Preservation	2L, 1T	Int : Ext 40:60	03

Course Objective: The objective is to introduce ideologies and various philosophies that helped to formulate the principles of conservation discipline as it exists today in India and abroad. The students shall be introduced to the various charters and agencies and its role in the field of conservation.

Course Outcomes: At the end of the course student will able to:

- Be acquainted with the philosophies and principles of conservation.
- Understand the various charters and roles of various organisations in conservation.
- Understand degree of intervention for restoration and preservation of built heritage and appropriate remedial measures and solutions for strengthening and retrofitting of historical structures.

Detailed Syllabus:-

UNIT – I

Introduction to Conservation, History of Conservation movement in West and India, Understanding various conservation Philosophies, Approaches and Principles, Understanding of various definitions and terminology such as Historicity, Heritage, Culture, Authenticity, Values, Transformations, Regeneration, Revitalization, Redevelopment, Integrated Conservation etc.

UNIT – II

Introduction to Fundamental approaches and procedures for the inventories, Understanding process of identification and listing, Introduction to methods of documenting historic sites and structures through site sketches and measured drawings.

UNIT – III

Understanding the Concepts and policies of conservation of built environment with the relevance of Charters as a code of practice in conservation, the role of various international and national agencies [Archaeological Survey of India (A.S.I.), Indian National Trust of Art & Cultural Heritage (INTACH), International Council of Monuments & Sites (ICOMOS), World Heritage Committee, and UNESCO] engaged in conservation practice and policy making.

UNIT – IV

Issues related with physical deterioration of built heritage and its conservation, various types of defects/decays, its causes and classification of different agents of deterioration. Study of issues to be considered and techniques for Restoration and preservation of built heritage.

Role of Historic Building/Area/City in Present Context : Understanding Historic City by doing a study of its Heritage Components, various aspects for spatial Planning, the role of conservation and relevance of historic buildings/areas in present context

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

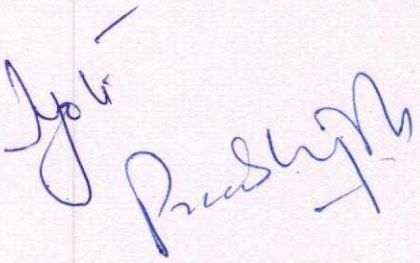
The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.



IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits – 3	Duration of Exam
UC/BARCH-609 (D)/19	Furniture Design	2L, 1T	Int : Ext 40:60	03

Course Objective: Furniture design course is intended to impart skills and techniques for developing and also innovating high-end household furniture, office/corporate furniture and resorts/hotel furniture.

Course Outcomes: At the end of the course student will able to Become aware overall intent is to make students understand construction/detailing of furniture design.

Detailed Syllabus:-

UNIT-I
Fundamentals of Design in Design of Simple Furniture and Ergonomics
Furniture design through ages medieval, European, Indian, modern and contemporary.

UNIT-II
Indoor – outdoor furniture, house hold, office furniture, inbuilt and standalone furniture.

UNIT-III
pace and Form Studies in Space Graphics - furniture graphics, materials & techniques for furniture design and construction.

UNIT-IV
Estimation costing and specifications, software's

Evaluation Criteria for Exam / Question Paper Setting:-
The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.
The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design.

Core References:
The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-609 (E)/19	Lighting and Illumination/ Lighting Design	2L, 1T	Int : Ext 40:60	03

Course Objective: Architectural Lighting Design is both science and art. An Architectural Lighting Designer understands the intricate details and process of construction, as well as an understanding of light, vision, and how together they define our built environment. Light allows us to see. Light defines what see. With an understanding of how light works, Architects and Interior Designers can extend their knowledge beyond forms and surfaces – they can enter a world of brilliance, glow, shadow, sparkle, and darkness.

Course Outcomes: A basic understanding of light is explored with a "hands-on" approach in the first assignment, a 3-Dimensional study of how light effect your perception. The exercise consists of fabricating small non-architectural abstract t light concepts with light. The student's individual discovery of new materials and light effects is encouraged.

Detailed Syllabus:-

UNIT-I

An overview of the history of light - Electric Lamps: Incandescent/Halogen/Fluorescent/HID/LED - learn basic wiring and simple lighting effects

UNIT-II

Light and Vision: Seeing and Measuring Light. Colour & Colour Media, and LEDs, - learn about vision and perception, colour, and - understanding shade and shadow

UNIT-III

controlling light, luminaire optics and distributions - introduction to light fixture materials and construction, and components

UNIT-IV

Light in Architecture and the Psychology of Light
learning to develop a lighting concept, approach, and strategy - drawing lighting, and rendering techniques

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.
The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits	Duration of Exam
UC/BARCH-614 - 618/19	Open Elective- II/Mooc Swayam	2L	2	Certificate from concerned/ imparting agency

The list of major domain of MOOC's courses are attached in the preamble & the department will have a MOOC coordinator who will display the list of MOOC in every semester.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 6th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits	Duration of Exam
UC/BARCH-619/19	Mentoring and Professional Development-III		Non Credit	No Exam

The objective of mentoring will be development of:

- Overall Personality
- Aptitude (Technical and General)
- General Awareness (Current Affairs and GK)
- Communication Skills
- Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities. For achieving the above, suggestive list of activities to be conducted are:

UNIT – I (Class Activities)

- Expert and video lectures
- Aptitude Test
- Group Discussion
- Quiz (General/Technical)
- Presentations by the students
- Team building Exercises

UNIT – II (Outdoor Activities)

- Sports/NSS/NCC
- Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.

Evaluation shall be based on rubrics for Part – A & B Mentors/Faculty in charges shall maintain proper record student wise of each activity conducted and the same shall be submitted to the department.

4th Semester 2019

IK Gujral Punjab Technical University
Bachelors of Architecture
(Constituent Campus)

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IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 4th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 6	Duration of Exam
UC/BARCH-401/19	Architectural Design -IV	1 L, 5 ST	Int : Ext 60:40	06 + External Viva Voce

Course Objective:
To make students appreciate the elements of vernacular/rural Architecture of a particular region of the state of Punjab and understand the role of vernacular/traditional in relative thermal comfort.

Course Outcomes: At the end of the course, the students will able to Study Social and Physical environment and methods of construction in Vernacular/Rural Architecture, emerging out of the traditional way of life of the people in a given place with special reference to Punjab and understand the principles of design in vernacular/ traditional architecture w.r.t to thermal comfort, climate, and topography.

Detailed Syllabus:-

- Study of Rural, Vernacular, Historical Settlements/buildings of distinct Architectural characteristics including detailing with physical planning and other related systems.

BUILDINGS

- Community Buildings
- Panchayat Ghar, Rural Dispensary or hostel
- Farmer's House, Village Dairy Farmhouses, Rural School, etc.

NOTE:-All buildings should have accessibility to specially-abled persons.

Evaluation Criteria for Exam / Question Paper Setting:-
One compulsory question is to be set from the entire syllabus. The evaluation is to be done through Viva-voce conducted at the institute level by Internal / External jury members appointed in consultation with the university from the approved panelist of examiners. The answer sheet shall be retained at the institute after the exam for the viva voce.

Instructions for the Faculty –
Design faculty should encourage and motivate the students for live projects of their immediate surroundings. (Identifying need, Framing requirements, and solution for the same, and it should be evaluated as one of the assignments and marked accordingly.)

Minimum two projects/assignments should be handled by students during the semester including a detailed study of a representative village & historical site. The study shall be done in groups to bring out the existing settlement pattern, socio-economic conditions, the pattern of life, building typology, materials/building technology used, and important architectural features. The end product shall be a well-documented report and drawings. Library/case study shall be made an integral part of every assignment.

Note – Design brief should be designed in such a way that incorporated the Agro-related infrastructure part in the design

Core References:
The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 4th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH-402/19	History of Architecture-III	2 L	Int : Ext - 40:60	03

Course Objective: To make students understand how different architectural solutions were evolved (in successive historical periods) within the constraints/limitations imposed by prevalent social and religious costumes, available building materials, prevailing climate, topography, complex structural problems, and building technology available at the time.

Course Outcomes: At the end of the course, the students will able to approach the architectural structures provided by their ancestors and co-relate them with the contemporary scenario.

Detailed Syllabus:- Study of world Architecture from the early stage to the Early Roman period besides the early era of Indian Architecture and Buddhist Architecture.

UNIT- I
Roman Architecture, Christian Architecture

UNIT- II
Byzantine Architecture, Romanesque Architecture

UNIT- III
Chulkyan and Ashoka period of Hindu Architecture, Dravidian Architecture

UNIT-IV
Indo Aryan Architecture, Orissa, Gujrat, Khajuraho

Evaluation Criteria for Exam Question Paper Setting:-

The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.
The question bank will be submitted to the university within one month of the commencement of the semester.

Instructions for the Faculty –

For each period given in the syllabus, stress is to be laid on the Architectural character and elements of Architecture with one or two representative examples to highlight those features. Emphasis should be laid on understating the evolution of buildings and form. The continuous evaluation shall be made of students' work based on class models, assignments and sketches and seminars, etc.

Core References:
The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 4th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 4	Duration of Exam
UC/BARCH-403/19	Building Construction & Materials-IV	1, -, -, 3,	Int : Ext 60:40	03

Course Objective: To make students understand and appreciate, various methods of building construction in coordination with the building materials and science related to them. Students will gain knowledge on the various applications of the roof and floor coverings in building construction.

Course Outcomes: At the end of the course student will be able to become aware of the roof and floor coverings. Understand details for trusses, staircases, sliding doors, sliding folding doors, partitions, paneling, work out and apply appropriate details for building construction of the same.

This subject consists of two parts

PART - I Building Materials (with emphasis on the learning of material).
PART - II Building Construction (with emphasis on construction drawings by pencil only).

Detailed Syllabus:-

PART – A BUILDING MATERIALS

UNIT-I

(A) **Roof-Coverings** - Constituents, Properties, Uses, Process of Laying of Roof Covering Materials e.g. G.I. Sheets, Asbestos Cement Sheets (Plain & Corrugated) with accessories, Clay Tiles - Country, Allahabad & Mangalore Tiles, etc.

UNIT-II

(B) **Floor Coverings-** Constituents, Properties, Uses and Process of Laying of Floor Covering Materials e.g. Linoleum, Cork Sheet, Parquette, Rubber (Tiles and Sheets) and Types of Stone and tile Flooring.

PART – B BUILDING CONSTRUCTION

UNIT-III

Roofs and Trusses (Timber)

- Introduction to different types of Roofs
- Principles of Construction and Details of King Post and Queen Post Trusses with Gutters, Eaves, and Ridge Details with/without Soffit and Roof Covering.
- Timber Built-up Trusses of various Spans.

UNIT-IV

- Doors & Windows - Design and Details of special-purpose door
- Timber partition, glass block partition, timber paneling
- Timber Staircase-Design and Details, Dhajji Wall Construction

Evaluation Criteria for Exam / Question Paper Setting:-

Total eight questions are to be set two from each unit & students are required to attempt a total of four questions i.e. one from each unit. The distribution of marks for **Part A** (Unit I&II): **Part B** (Unit III&IV) is 12: 28 marks.

Instructions for the Faculty –

All efforts must be directed to make the learning an enriching experience.

Market Survey to study the complete range of products available in the market under different trade names with their manufacturing details, specifications, and performance. Field visit to study the complete process of lying of reinforcement and concreting. Preparing Construction sheets on the above topics. Emphasis shall be laid on understating of complete construction details of Double Storeyed structure.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 4th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 4	Duration of Exam
UC/BARCH-404/19	Structure Design -II	2 l, 2 Tut	Int : Ext - 40:60	03

Course Objective: The aim and objective of the course on structure design-II are to get introduced to the design of reinforced concrete structures and to make the building structurally safe.

Course Outcomes: At the end of the course, the students will able to – design RCC Beams, Slabs, Columns, and footings with different loads for one-story simple buildings.

Detailed Syllabus: -

UNIT- I
Beam
Design of Single Reinforced Beams, Doubly Reinforced Beams, Depth/ Thickness of Section Area of reinforcement, Shear Check, Shear Reinforcement, Introduction to Cantilever beam, T- Beams and L- Beams

UNIT- II
Slab
Design of One-Way Slab, Depth/Thickness of Section Area of Reinforcement, Shear Check, I S 456 Code-provisions, Introduction to Two Way Slab, *ly /lx* ratio

UNIT- III
Column
Design of Columns, Long /Short Columns, Basic Equation of Design, IS 456 Code Provisions, Section of Column, Longitudinal and Lateral Reinforcement

UNIT-IV
Footing
Design of Isolated Square Footings, Consideration of Bending Moment, One Way Shear, and Two-Way Shear, Area of reinforcement

Evaluation Criteria for Exam/ Question Paper Setting: -

The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.
The question bank will be submitted to the university within one month of the commencement of the semester.
Instructions for the Faculty - The students of architecture must be made clear about the design concepts and tutorials be made an integral part of learning. The faculty also should encourage the students to read the code IS 456-2000.

Core References:
The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 4th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-405/19	Building Services-I	2 L, 1 T	Int : Ext - 40:60	03

Course Objective: To make students learn and understand the requirements of Building Services and their application to buildings with a focus on Water Supply, Drainage, and Sanitation.

Course Outcomes: At the end of the course, the students will able to:

- Understand the terminology and basic principles of water supply, stormwater drainage, and sanitation.
- Understand water requirements in various types of buildings, types of water storage and distribution systems, sanitary & drainage system requirements, and their integration in architectural design.
- Understand the functions of various sanitary fittings and fixtures and be aware of the different types of materials and specifications of the same.
- Develop design skills for water supply and drainage systems in buildings and prepare architectural drainage layouts.

Detailed Syllabus:-

UNIT- I
WATER SUPPLY

Water- Role & Importance, Sources, Quality, Impurities, Water Supply- Introduction, Basic Principles, Systems of Water Supply, Water Storage – Systems, Capacity and Location, Calculation of Water consumption, Domestic, hot and cold water supply systems, Pipes materials- Size and their jointing details, Fittings- sanitary fittings like Ferrule, Stopcock, Bibcock, etc, Metering- Various kinds of Water Meters and connections.

UNIT- II
SANITATION

Sanitation- Role, Importance, Basic principles of disposal of waste from buildings, Dry and Wet Carriage Systems, Sanitary Fittings-- Washbasins, WC's, Bath Tubs, Sink, Urinals, Bidets, Flushing Cistern, Traps, etc.
Various types of joints, Pipes materials- Size and their jointing details, Septic Tanks, Treatment Plants, Manholes, Chambers- Purpose, Location, Structure and Ventilation, Drainage Systems- Types, Advantages/Disadvantages -- separate, combined and partially combined systems, Stack system--One pipe and two pipe systems, Testing of Drains, Gradients-- Purpose and Principle for laying Drains and Sewers. Self -cleansing and non-scouring velocities, Size of Drain Pipes, and Materials used.

UNIT- III
STORMWATER DISPOSAL

Types of Roads-WBM (water-bound macadam) Road-Tar, Bitumen, Asphalt and RCC roads, Description and Suitability of Roads for Storm Water Drainage with Comparative Cost Analysis, Pavements- Types (Soil stabilized, Brick and Stone paving, interlock tiles), Use, Advantages/Disadvantages, Drainage- Sub- drains, Culverts, Ditches, Gutters, Drop inlets and Catch Basins, Rain Water Disposal for individual buildings. Rain Water Harvesting

UNIT-IV

Preparation of the drawings/ layouts of the building services in the design project of 3 and 4 semesters by the student. Kitchen and bathroom partition be highlighted.

Evaluation Criteria for Exam Question Paper Setting:-

The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.

The question bank will be submitted to the university within one month of the commencement of the semester.

Instructions for the Faculty –

Market survey to study materials available. The subject shall be taught through the combination of Guest Lectures, Field visits, Visits to the Project Sites, the actual display of Fittings, Pipes, Joints used, and by carrying out exercises in the layout of simple drainage systems for Small buildings, Planning of Bathrooms and Lavatory Blocks in Domestic and Multi-storied buildings

Exercises shall be clubbed with Design Studio Project

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 4th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-406/19	Climate & Architecture-II	2L, 1 T	Int : Ext - 40:60	03

Course Objective: To acquaint the students and make them aware of the concept of climate as a significant determinant of built forms and to familiarize them with various climate control devices.

Course Outcomes: At the end of the course, the students will able to understand advanced climatology and ventilation as an important consideration.

Detailed Syllabus:-

UNIT- I

Ventilation in Buildings:- Ventilation - Introduction and its mechanism, Wind Movement, Air movement within and around buildings, the effect of surrounding elements and pattern of wind flow, Guidelines for designing well-ventilated buildings. Optimum Orientation of Building—Importance, Form, and Placement of Building

UNIT- II

Solar Radiations:- Introduction to basic Thermal Units, Theory of Heat Flow, Heat Transmission, etc, Thermal Properties of various Building Materials, Solar Radiations- Movement of Sun, Method of Recording, Radiation Gains by various Materials, Study of various Landscape Elements and Solar Passive Devices for Climatic Control within Buildings

UNIT- III

Introduction to Green Building Rating systems

Sustainable development - Concept, Definition, Importance and Scope, Introduction to Energy Demand and Consumptions, Energy Saving Technique in Buildings, Alternate Energy Sources in India, and various Green Building Rating systems in India

UNIT-IV

Introduction to Codes for Energy Conservation of Building

Role of NBC sustainability and ECBC Codes in the design of buildings, Introduction to software which student can use for design as per these codes.

Evaluation Criteria for Exam Question Paper Setting:-

The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.
The question bank will be submitted to the university within one month of the commencement of the semester.

Instructions for the Faculty –

Teaching in the subject shall be made a combination of guest lectures by experts, visits to the existing Green Buildings, attending seminars organized by the Professional Bodies/ others, and preparing Models/ Charts to make students familiar with the use of natural elements as an essential input to design sustainable buildings.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 4th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH-407/19	Computer Application -II	1L, 2 FW	Int : Ext - 40:60	Ext Viva Voce

Course Objective: To make students aware of the role and importance of Computers in the field of Architecture. To develop 3D skills in the students by familiarizing them with different software.

Course Outcomes: At the end of the course, the students will able to :

1. Develop skills required for using Computers as a tool for design, 3D modeling, and rendering.
2. Familiarize themselves with 3D model design and rendering techniques using different software for building visualization/design representation.
3. Produce 3D models and renderings of simple and complex buildings using CAD and other software programs.

Detailed Syllabus:- Being an advanced learning course, students will be introduced to 3D- and rendering techniques of the buildings.

UNIT- I

- 3-D Modelling on Auto cad of Single Story and Multi-Story Buildings,
- 3-D Modelling of Multiple Building in a Single Site, Camera View of the Buildings,
- 3-D Modelling on 3-D Max.
- View on Google Sketch Up

UNIT- II

- Rendering of the View on any of the following Software
  - 3D- Max,
  - Photoshop,
  - V-ray and
  - Any other Software.

UNIT- III

- Basics of Animation on Google Sketch-up /3D-Max

Evaluation Criteria for Exam / Question Paper Setting:-

Evaluation is through Internal Viva Voice of the work done by the student during the semester.

Instructions for the Faculty –

Emphasis should be laid on developing the skill of 3-D on the Software's

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 4th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits – No Credit	Duration of Exam
UC/BARCH-408/19	Mentoring and Professional Development-II	-, -, 2, -	Int : Ext – 100:00	No Exam

The objective of mentoring will be the development of:

- Overall Personality
- Aptitude (Technical and General)
- General Awareness (Current Affairs and GK)
- Communication Skills
- Presentation Skills

The course shall be split into two sections i.e. outdoor activities and class activities. For achieving the above, suggestive list of activities to be conducted are:

UNIT – II (Class Activities)

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Teambuilding Exercises

UNIT – II (Outdoor Activities)

1. Sports/NSS/NCC
2. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.

The evaluation shall be based on rubrics for Part – A & B Mentors/Faculty in charges shall maintain proper record student wise of each activity conducted and the same shall be submitted to the department.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 4th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 2	Duration of Exam
UC/BARCH-409/19	Constitutional Law	2L	Int : Ext - 40:60	03

Course Objective
The objective of the course is to familiarize students (Prospective engineers) with an elementary knowledge of laws that would be of utility in their profession. The syllabus covers the Constitution of India and new areas of law like IPR, ADR, Human Rights, Right to Information, Corporate law, Law relating to Elections, and Gender Studies. To be supplemented by the historical development of laws wherever required.

Course Outcomes: At the end of the course, the students will able to get the basic knowledge of law and constitution.

Detailed Syllabus:-

UNIT- I :
Constitutional Law covering the Preamble; Fundamental Rights, Judicial Activism including Equality and Social Justice, Life and Personal Liberty and Secularism and Religious freedoms; Directive Principles of State policy; Fundamental Duties; Emergency provisions – kinds, legal requirements and legal effects; (5 Lectures)

UNIT- I A:
Human Rights and Public International Law covering Human Rights in International Law-Theoretical foundation, human rights, and international law; Historical development of human rights; Human Rights in Indian tradition and Western tradition; Covenant on Civil & Political Rights 1966 including Optional Protocol – I (Individual Complaint Mechanism) & Optional Protocol – II (Abolition of Death Penalty); Covenant on Economic, Social and Cultural Rights 1966 including Optional Protocol – I (2002); UN Mechanism and specialized agencies, (UNICEF, UNESCO, WHO, ILO, FAO, etc.); International NGOs – Amnesty International, Human Rights Watch, Greenpeace Foundation; Enforcement of Human Rights in India including Supreme Court, High Courts, Statutory Commissions – NHRC, NCW, NCM, NC-SCST, etc. Public International Law, covering Introduction, Customs, Treaties, State territories including Recognition of States and Governments, Law & Practice of Treaties and Law of Sea; (5 Lectures)

UNIT- II :
General Principles of Contract under Indian Contract Act, 1872 covering General principles of contract – Sec. 1 to 75 of Indian Contract Act and including Government. as a contracting party, Kinds of government contracts and dispute settlement, Standard form contracts; nature, advantages, unilateral character, principles of protection against the possibility of exploitation, judicial approach to such contracts, exemption clauses, the clash between two standard form contracts; (4 Lectures)

UNIT- II-A:
Arbitration, Conciliation and ADR system covering Arbitration – meaning, scope and types – the distinction between the law of 1940 and 1996; UNCITRAL model law – Arbitration and expert determination; Extent of judicial intervention; International commercial arbitration; Arbitration agreements – essential and kinds, validity, reference and interim measures by the court; Arbitration tribunal – appointment, challenge, the jurisdiction of the arbitral tribunal, powers, ground of challenge, procedure and court assistance; Award including Form and content, Grounds for setting aside an award, Enforcement, Appeal, and Revision; Enforcement of foreign awards

– New York Convention Awards and Geneva Convention 24 Awards; Distinction between conciliation, negotiation, mediation and arbitration, confidentiality, resort to judicial proceedings, costs; (5 Lectures)

UNIT- III :

Law relating to Intellectual property covering Introduction – meaning of intellectual property, main forms of IP, Copyright, Trademarks, Patents and Designs, Secrets; Other new forms such as plant varieties and geographical indications; International instruments on IP – Berne convention, Rome convention, TRIPS, Paris convention and international organizations relating IPRs, WIPO, WTO etc; Law relating to Copyright in India including Historical evolution of Copy Rights Act, 1957, Meaning of copyright – literary, dramatics and musical works, sound records and cinematographic films, computer programs, Ownership of copyrights and assignment, Criteria of infringement, Piracy in Internet – Remedies and procedures in India; Law relating to Trademarks under Trademark Act, 1999 including Rationale of protection of trademarks as Commercial aspect and Consumer rights, Trademarks, registration, procedures, Distinction between trademark and property mark, Doctrine of deceptive similarity, Passing off an infringement and remedies; Law relating to Patents under Patents Act, 1970 including Concept and historical perspective of patents law in India, Patentable inventions with special reference to biotechnology products, Patent protection for computer programs, Process of obtaining patent – application, examination, opposition and sealing of patents, Patent cooperation treaty and grounds for opposition, Rights and obligations of patentee, Duration of patents – law and policy considerations, Infringement and related remedies; (8 Lectures)

UNIT- III-A:

Right to Information Act, 2005 covering, Evolution and concept; Practice and procedures; Official Secret Act, 1923; Indian Evidence Act, 1872; Information Technology – legislation and procedures, Cybercrimes – issues and investigations; (3 Lectures). Labour Laws, covering Industrial Disputes Act, 1947; Collective bargaining; Industrial Employment (Standing Orders) Act, 1946; Workmen□s Compensation Act, 1923; (3 Lectures). Corporate Law, covering Meaning of corporation; Law relating to companies, public and private (Companies Act, 1956) general provisions; Law and multinational companies – International norms for control, FEMA 1999, collaboration agreements for technology transfer; Corporate liability, civil and criminal; (4 Lectures)

UNIT- IV :

Election provisions under Indian Constitution (Art.324–329), covering Representation of Peoples Act and Prevention of Corruption Act, 1988; Superintendence, directions and control of elections to be vested in Election Commission; Prohibition as to ineligibility for inclusion in electoral roll on ground of religion, race, caste or sex; Election to the house of people and to the legislative assemblies of States to be on the basis of adult suffrage; Power of parliament to make provisions with respect to elections to legislatures; Power of legislature of State to make provisions with respect to elections to such legislature; Bar to interference by courts in electoral matters; Offences relating to elections under IPC 1860 (Sec.171-A to 171-I), Definition – candidate electoral rights, Bribery, undue influence and impersonation at elections and punishments, False statement in connection with election, Illegal payment in connection with election, Failure to keep election accounts; (4 Lectures)

UNIT- IV A:

Gender Studies, covering Meaning of gender, international perspective and national perspective; Laws relating women in India; Judicial approach and responses- 25 Vishaka V/s State of Rajasthan 1997 SC; Rights enforcement mechanism in India; Landmark judicial decisions of Supreme Court relating to women; (4 Lectures)

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Emphasis should be laid on developing the knowledge for the law and constitution.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

ANNEXURE-1

7th Semester 2019

IK Gujral Punjab Technical University
Bachelors of Architecture
(Constituent Campus)

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 7th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 12	Duration of Exam
UC/BARCH- 701/19	Practical Training	18 to 22 Weeks	Int : Ext 60:40	No Exam/ Only Univ. Viva-Voce

Course Objective: The students are required to undergo Practical Training in a qualified, registered and competent Architect's Office. Students will be trained in the various practical aspects of Architecture, Construction & Professional practice.

Course Outcomes: At the end of the course, the students will able to learn the intricacies of Architectural Profession by joining and working with practicing Architects/Architectural firms for one complete semester.

Practical Training Manual:

- The total marks shall be suitably apportioned to assess on regular basis the monthly reports, office work and work done outside office hours.
- Students are required to send/ submit monthly reports of work done by them in the office in which they are working according to a prescribed schedule. These reports shall be assessed/marked regularly by the Practical Training Coordinator(PTC).
- On the conclusion of training, the work done by the student shall be examined and evaluated through a viva- voce to be conducted jointly by the Director/ Principal/HOD, PTC and one External Examiner ,who will be appointed by the University.

Work to be done by the student:

- During training ,students are required to do two distinct types of work in order to make optimum utilization of the period of training.

a) **Work to be done during office hours:**
The work to be done during office hours will include:

- Drafting, Tracing, Sketch designs, Presentation drawing, Perspectives, Models, documentation etc.
- Working Drawing and details

b) **Work to be done during extra - office hours:**
The work to be done during extra - office hours will include:

- Preparing a study report on Building design, Analysis incorporating Site visits, recording Observations etc.

DISTRIBUTION OF MARKS

- **University (External) Marks - 150**
- **(a) Univ. Viva – Voce - 100**
  (to be conducted by the external expert appointed by University)
  c) Marks awarded by the employer -50
  (to be sent in original to the University)
- **Internal Marks - 350**
  (to be sent by PTC in the format given below)

NOTE: Based on the above guidelines a detailed program shall be drawn each year by the PTC, which shall be approved by the Director/Principal/ HoD, before it is implemented. The intention will be to update the program on regular basis, incorporating new details, with focus on making continuous qualitative improvements of the practical training.

Evaluation Criteria for Exam / Question Paper Setting:- No Exam/ Only Univ. Viva-Voce.

8th Semester 2019

IK Gujral Punjab Technical University
Bachelors of Architecture
(Constituent Campus)

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 8th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 7	Duration of Exam
UC/BARCH-801/19	Architectural Design -VII	1 L, 6 ST	Int: Ext 60:40	Portfolio viva voce

Course Objective: To make students understand the principles and implications of advance and complex design problems with a focus on planning, landscaping, energy conservation, and services considering zoning regulations.

Course Outcomes: At the end of the course, the students will be able to design complex health care academic projects, design for pandemics situations, design Terminals of air/railway/bus, design Light Industrial buildings for different uses.

Detailed Syllabus:-

Design of complex projects with a focus on Universal approach and movement.

UNIT-I Commercial Buildings

- Planning and Designing of large Complexes related to **Health care and Academic Institutions**-Hospitals cum Medical Colleges etc.

UNIT-II Public buildings

- Planning and Designing of **Traffic Nodes**-Bus Terminal, Railway Station, Airport.
- Light **Industrial Buildings** involving manufacturing, display, etc

Evaluation Criteria for Exam / Question Paper Setting:-

External marks shall be awarded through viva-voce conducted by the External Jury appointed by the University of the work done by the student during the semester. The answer sheet shall be retained at the institute after the exam for the conduct of viva voce.

Instructions for the Faculty –

Design faculty are required to take a well prepared well-researched lecture on the said topics and should encourage and motivate the students for taking up live projects of their immediate surroundings (Identifying need, Framing requirements and solution for the same, and it should be evaluated as one of the assignment)It is recommended that 2-3 projects be handled by students from the topic given above. Library and prototype studies should be carried out for the remaining projects. Model and perspective should be made an essential part of project presentation.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 8th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 4	Duration of Exam
UC/BARCH-802/19	Comprehensive Smart Village Development-I	1 L, 3 ST	Int: Ext 60:40	Portfolio viva voce

Course Objective: The objective of the studio subjects is to provide the students with higher levels of specialized knowledge in the field of planning the smart village.

Course Outcomes: At the end of the course, the students will be able to deal with the environment, policy-making and analysis, governance, and rehabilitation and resettlement issues for smart village development.

Detailed Syllabus:-

UNIT- I

Village System - Village as an organic entity – physical, social, economic. The administrative structure of village - Administrative framework of rural areas – village administration – district block – panchayats, Rural land use, and morphology – theoretical perspectives, Rural resources – resource mobilization - social and economic implications

UNIT- II

Rural Development - Rural development and planning – theories – indicators of development, Rural Infrastructure development and associated issues, Rural community development strategies link with rural planning, Rural entrepreneurship

UNIT- III

Problematic of Rural Areas - Rural Poverty – factors and processes – social and economic dimensions, Rural-urban linkages – dichotomy or symbiosis, Rural-urban divide in terms of infrastructure facilities, Challenges faced by rural areas –economic, social, environmental, fiscal

UNIT- IV

Rural Policy and Planning - Rural development and planning – experiences of countries from the Global South, Various international, national, and regional policies, Strategies adopted, and rural development programs with special reference to India. Critical appraisal of rural development programs

Evaluation Criteria for Exam / Question Paper Setting:-

External marks shall be awarded through viva-voce conducted by the External Jury appointed by the University of the work done by the student during the semester. The answer sheet shall be retained at the institute after the exam for the conduct of viva voce.

Instructions for the Faculty –

Design faculty are required to take a well-prepared well-researched lecture on the topic and should encourage and motivate the students for taking up live projects of their immediate surroundings (Identifying need, Framing requirements, and solutions for the same, and it should be evaluated as one of the assignment).

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 8th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-803/19	Urban Design	2 L, 1T	Int: Ext 40:60	03

Course Objective: To make students understand the principles and design on an urban scale.

Course Outcomes: At the end of the course, the students will able to will be able to create awareness and promote understanding of the nature, role, and importance of Urban Design in the making of quality Built environments and Human Settlements

Detailed Syllabus:-

UNIT- I

- Introduction, Role, Scope, and Importance of **Urban Design**
- The distinction between **Urban Design, Architecture and Town Planning**
- **Elements of Urban Design-** Pattern, Grains, Texture, Density, etc, their role and importance.
- **Determinants of Urban Form –** Landform, Climate, Symbolism, Activity Pattern, Socio-cultural Factors, Materials, Techniques, etc. and their role and importance

UNIT- II

- **Imageability-** Elements their role and importance including Paths, Nodes, Landmarks , Edges, Districts, etc.
- **Designing Cities-** Role and importance of Communication, Utilities, Landscape Features, Transport, Visual Expression, Size, Contrast, Urban Character, etc.
- **Shapes of the Cities-** Comparative advantages and Disadvantages

UNIT- III

- **Urban Spaces**-Typology including Street, Square, Precinct, Piazza, Mall, etc
- **Urban Spaces-** Elements, identification, characteristics, and role in shaping the spaces
- Changing Role, Importance, and Pattern of **Urban Spaces** in historical perspective- **Greek, Romans, Medieval and Contemporary cities.**
- **Design Principles** involving Scale and Enclosures

UNIT- IV

- **Development Controls-** Role and Importance in Urban Design.
- **Urban Design study of selected Capital Cities-** Chandigarh, Delhi, and Jaipur
- **Legal and Institutional framework** for Urban Design including Delhi Urban Art Commission- Objectives, Constitution, Role, Importance, Impact, etc

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.

The question bank will be submitted to the university within one month of commencement of the semester.

Instructions for the Faculty –

Emphasis shall be laid on understanding the evolution of Cities and Buildings. The continuous evaluation shall be made of students' work based on various assignments and sketching. Teaching in the subject will be a combination of Expert lectures, specific case studies, and field visits of historical and contemporary cities. Students would be required to do, in groups, a case study of a city to make them understand the various aspects of urban design. The study will be illustrated with maps, visuals, photographs, and sketches.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 8th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-804/19	Housing	2 L, 1T	Int: Ext 40:60	03

Course Objective: To make students understand the principles and implications of housing & understand the role, importance, and issues related to housing.

Course Outcomes: At the end of the course, the students will able to will be able to Analyze what are the housing issues we are facing. Understand how we can contribute to eliminating this housing problem. Know about what our government is doing to provide a basic comfortable environment for the citizens of India.

Detailed Syllabus:-

UNIT- I

- Role and importance of Housing
- Status of Housing in India
- Housing need, demand, and concept of affordability.
- Housing typologies including plotted and flatted development
- Housing surveys including methods of conducting surveys

UNIT- II

- Housing- problems and solutions in India
- Housing for the Poor
- Slums -Origin, Growth, Problems, and Solutions
- Role of Public and Private Sectors in Housing.

UNIT- III

- National Housing and Habitat Policy 2007
- Institutional framework for Housing Finance

UNIT- IV

- Institutional framework for Housing Delivery
- Factors affecting Cost of Housing
- Basic Housing Norms and Standards for EWS, LIG, and MIG

Evaluation Criteria for Exam Question Paper Setting:-

The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.
The question bank will be submitted to the university within one month of the commencement of the semester.

Instructions for the Faculty –

Teaching in the subject shall be made a combination of guest lectures by experts, visits to the existing Green Buildings, attending seminars organized by the Professional Bodies/ others, and preparing Models/ Charts to make students familiar with the use of natural elements as an essential input to design sustainable buildings.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 8th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 5	Duration of Exam
UC/BARCH-805/19	Building Construction & Materials-VII	1 L, 4 ST	Int : Ext 60:40	03

Course Objective: To make students understand the details of finishes , materials and construction work.

Course Outcomes: At the end of the course, the students will be able to familiar with special constructional details , finishing & furnishing, extension & expansion joints and basements with details.

Detailed Syllabus:-

UNIT-I

- Study , design and details of various types of counters and Interior finishes, lighting for Banks, Hotels, Offices, Shops, Railway station and other public places.
- Materials and Construction details of wall Panelling, False Ceiling including Thermal and Acoustics treatments.

UNIT-II

- Extension and Expansion joints in R.C.C.
- Construction of Basement including design, detailing, treatment for water/damp proofing etc.
- Study of Prefabricated structures.
- Advantages and disadvantages of on-site and off- site pre- fabrication.
- Pre-fabricated components, involving simple details in prefabrication.

Evaluation Criteria for Exam / Question Paper Setting:-

- Two questions are to be set from each Unit.
- Students are required to attempt Three Questions with One question from each Unit.

Instructions for the Faculty –

All efforts must be directed to make the learning an enriching experience.

Market Survey to study complete range of products available in the market under different trade names with their manufacturing details, specifications and performance. Field visit to study the complete process of lying of reinforcement and concreting. Preparing Construction sheets on above topics. Emphasis shall be laid on understating of complete construction details of Double Storeyed structure.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 8th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-806 (A) /19	GIS & Remote sensing	2 L, 1T	Int : Ext 40:60	03

Course Objective: To introduce the students to the basic concepts and principles of various components of remote sensing, GIS, and GPS and to provide exposure to its practical applications

Course Outcomes: The course will enable the students to understand: The Principles of Remote sensing, satellite images, and Applications of remote sensing. The GIS and its Data models. The Global Navigation Satellite System.

Detailed Syllabus:-

UNIT- I

Remote Sensing: Physics of remote sensing, Electromagnetic spectrum – wavelength regions important to remote sensing, Spectral reflectance curves, Remote sensing satellites, and their data products, resolution concept, Platforms, and Sensors

UNIT- II

Satellite Image - Image Interpretation and Analysis– basic elements of image interpretation- visual interpretation keys – Digital Image Processing – Pre-processing – image enhancement techniques – multispectral image classification – Supervised and unsupervised, Applications of remote sensing

UNIT- III

Basic concepts of geographic data, GIS and its components, Data models, Topology, Process in GIS: Data capture, data sources, geospatial analysis, basic components of GIS – standard GIS software's – Data type – Spatial and non-spatial (attribute) data – measurement scales – Data Base Management Systems (DBMS).

UNIT- IV

Data Entry, Storage and Analysis - Data models – vector and raster data — data input by digitization and scanning, georeferencing– attribute data analysis, Modelling– Land Information system. GIS Applications, Global Navigation Satellite System (GNSS), GPS, GLONASS, GALILEO, GPS: The space segment, Control segment, User segment, GPS Applications

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.
The question bank will be submitted to the university within one month of commencement of the semester.

Instructions for the Faculty –

Focus on the life study and application of the subject into the architecture design.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 8th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-806 (B) /19	Indian Architecture/ Vastu Shastra	2 L, 1T	Int: Ext 40:60	03

Course Objective: To develop an understanding of rules and regulations of the Ancient Hindu System, Science of architecture.

Course Outcomes: At the end of the course, the students will able to will be able to Analyze the different principles and systems of Vastu shastra.

Detailed Syllabus:-

UNIT- I
Indian Architecture (Urban) – Banaras, Kashmir, Gujarat,, and North east.

UNIT- II
Indian Architecture (Rural) – Vernacular Architecture of India.

UNIT- III

Terminology of Vastu- shastra, fundamental concepts, elements of vaastu, designs based on directional alignments, laws of nature, Indian Traditional Vastu shastra and Evolution of Vaastu-shastra in contemporary Architecture, modern Vastu science fundamentals. : Magnetism in the Earth, Magnetic Compass, Magnetic Axis, Magnetic Directions, Natural Directions, Earth Movement - Earth's self-Revolution around its Own Axis. Sun or Solar Movement, Wind Flow Movement, Zones inside the Vastu / Buildings, Clockwise Movement, Slope of Plot - Slope for erecting Vastu, Shape of Plot - Shape for Planning the Vastu.

UNIT- IV
Study of Residential and Public buildings and other buildings designed on the basis of Vastu Shastra Example in Architecture based on Vastu Shatra.

Evaluation Criteria for Exam / Question Paper Setting:-
The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.
The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Assignments, Site visits, Plates
Core References:
The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 8th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-806 (C) /19	Advance Building Materials	2 L, 1T	Int : Ext 40:60	03

Course Objective: This course deals with some more building materials used in the construction industry. It is aimed to help the student learn and understand the application of advanced building materials.

Course Outcomes: At the end of the course, the students will able to will be able to understand various advanced building materials in respect of their, composition, uses, properties and applications in the construction sector.

Detailed Syllabus:-

UNIT- I

- Advanced building materials - Introduction
- General Building Material trends: Eco-friendly, cost-effective, Nano-technology, aesthetic materials, recycled materials etc.
- Properties of advanced building materials: thermal control, light control, ventilation, illumination, insulation, moisture control, self-cleaning, damp proofing etc.
- Types of advanced building materials, based on composition- cement based, glass based, plastic based, metal based composite materials
- Types of advanced building materials, based on behaviour/ technology- Intelligent building materials, Interactive building materials, eco-friendly building materials

UNIT- II

- Cement based composite building materials, Different types of fibres- steel fibre, carbon fibre, natural fibre, Proportioning of fibres and cement, Design and structure of cement composites, uses and application
- Glass based composite building materials, composition, properties and uses
- Plastic based composite building materials, composition, properties and uses
- Metal based composite building materials, composition, properties and uses
- Multiphase materials, composition, properties and uses
- Study of materials like Lotusan, Aerogels, Titanium dioxide facade, bio-concrete, bulk-fullerene, metal foam, liquid granite, magnetic curtains, ETFE, solar cells, solar shingles etc.
- Related Case studies/examples of applications in modern buildings

UNIT- III

- Intelligent building materials- types, general composition, uses, application
- Interactive building materials- types, general composition, uses, application
- Eco-friendly building materials- types, general composition, uses, application
- Related Case studies/examples of applications in modern buildings

UNIT- IV

- Latest building material, construction technology and market trends of the following applications in buildings:
  Advance Floor and Wall finishes, Ceiling and Roofing materials
  Clay and Cement Products, Building fixtures, Paints & Varnishes
  Ferrous and Non Ferrous Metals

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum of one from each unit.

The question bank will be submitted to the university within one month of commencement of a semester.

Instructions for the Faculty –

Market survey, sample collection of various building materials, the know-how of application, exploring the characteristics of each material Site visits for studying and understanding the application of building materials

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 8th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-806 (D) /19	Retail Design	2 L, 1T	Int: Ext 40:60	03

Course Objective: To make students understand the to get known to the students about prevailing, past, and future scenarios of retailing in India

Course Outcomes: At the end of the course, the students will be able to design a retail outlet.

Detailed Syllabus:-

UNIT- I

Introduction – Meaning, nature, scope, importance, growth, and present size. Career options in retailing, Technology induction in retailing, future of retailing in India,

UNIT- II

Types of retailing: stores classified by owners, stores classified by merchandising categories. Retailing formats, cash and carry business; Retailing models- franchiser franchisee, directly owned; wheel of retailing and retailing life cycle; cooperation and conflict with other retailers.

UNIT- III

Retail planning- importance and process; developing retailing strategies: objectives, action plans, pricing strategies and location strategies, visual merchandising and displays

UNIT- IV

Retail Selling Skills: Pre-Check, Opening the Sale, Probing, Demonstration, Trial, Handling Objections, Closing, Confirmations & Invitations. Retail Audits, Online Retailing, changing role of retailing in globalised world

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Presentation would be made by the teacher. The students are expected to do library studies and seminars (Reports, Tutorials and PPT's) on varied topics to supplement the information base and make more interactive.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 8th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-806 (E) /19	Advance Structure Systems	2 L, 1T	Int : Ext 40:60	03

Course objective: This course addresses advanced structures, exterior envelopes and contemporary technologies. It continues the exploration of structural elements and systems, and expands to include more complex determinate, indeterminate, long-span and high-rise systems.

Course Outcome: It addresses the contemporary exterior envelope with an emphasis on their performance attributes and advanced technologies.

Detailed Syllabus:-

UNIT- I
Pre-fabricated construction & Pre-engineered building. New Material in Construction. Cold form sections, FRP (Fibre Reinforced Polymer)
UNIT- II
Primary behaviour of structural systems w.r.t super structure & external envelop, Retrofitting of buildings.
UNIT- III
Earth Quake resistant structural systems
UNIT- IV
Fire resistant & blast resistant structural systems

Evaluation Criteria for Exam / Question Paper Setting:-
The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.
The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design.

Core References:
The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 8th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-807(A) /19	Ekistics	2 L, 1T	Int : Ext 40:60	03

Course Objective: To make students understand the principles and implications of Ekistics & understand the role, importance in architecture and planning.

Course Outcomes: This course intends to develop an understanding the evolution of settlement planning.

Detailed Syllabus:-

UNIT- I

Introduction: Meaning and Scope in Relation to town planning and architecture. • Settlement patterns in later periods of history; Changing form and pattern of human settlements in ancient, medieval, colonial and modern India

UNIT- II

Role and contribution of the following towards contemporary town planning thought- Patrick Geddes, Patric Abercrombie, Daniel Burnham, Soria Y Mata, Frederick Olmstead, Ebenezer Howard, Clarence Perry, Clearance stein, CA Doxiadis, Le Corbusier, Frank Lloyd Wright

UNIT- III

Globalization and its impact on cities – Urbanization, emergence of new forms of developments – self sustained communities – SEZ – transit development – integrated townships – case studies. • Scope and Content of Master plan – planning area, land use plan, and Zoning regulations – zonal plan – need, linkage to master plan and land use plan – planned unit development (PUD) – need, applicability and development regulations -

UNIT- IV

Urban Renewal Plan – Meaning, Redevelopment, Rehabilitation, and Conservation – JNNURM – case studies. • Definition and explanation of the concepts of density, FAR, land use, and zoning
The emergence of the metropolitan phenomenon; Planning problems of cities and Solutions • Rural and regional Systems: The rural-urban relationships; Problems of rural systems.

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.
The question bank will be submitted to the university within one month of commencement of a semester.

Instructions for the Faculty –

The presentation would be made by the teacher. The students are expected to do library studies and seminars (Reports, Tutorials, and PPT's) on varied topics to supplement the information base and make it more interactive.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 8th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-807(B) /19	Art Appreciation	2 L, 1T	Int: Ext 40:60	03

Course Objective: To make students understand the principles of art and appreciation. Disseminating a broad overview of Art and Design and enabling students to understand visual awareness, creativity and cultural understanding of Design as a Multidimensional creative Art

Course Outcomes: At the end of the course, the students will able to gain knowledge and understanding of the universal and timeless qualities that identify all great art. To introduce the students to the importance of art in today's world and the purposes art has served from pre - historic through modern times in a variety of cultures both western and oriental. To understand artistic intent and expression through basic element of art and architecture and to increase appreciation of art in today's society.

Detailed Syllabus:-

UNIT- I

Introduction- Defining the disciplinary differences Introduction to various types of Art, Concept of beauty and Aesthetics. Evolution of art and design. A historical perspective History of Art. Art through ages. Importance of Visual perception, Design elements from nature.

UNIT- II

Expression of Art and Design Relationship between Art and Design with man, space and environment. Concept of space. Articulation of form, sense of enclosure, Organisation of spaces.

UNIT- III

Introduction to theories Golden proportion, Theories of scale and proportion, Vitruvian theory, Modular man, principles of Design and elements of Architecture.

UNIT- IV

Relations in Art, Design and Architecture Factors influencing the process of Art, Design and Architecture. Form and function. Review of selected examples.

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Presentation would be made by the teacher. The students are expected to do library studies and seminars (Reports, Tutorials and PPT's) on varied topics to supplement the information base and make more interactive.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 8th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-807(C) /19	Industrial / Prefab Technologies	2 L, 1T	Int : Ext 40:60	03

Course Objective: To understand the design principles related to prefabrication elements and to obtain knowledge on the concepts of production, transportation, assembling & erection of precast buildings.

Course Outcomes: At the end of the course, the students will able to describe various structural systems and standard organizing requirements. Identify and differentiate structural behaviour of building elements. Design building elements and applications. Identify and describe working principles of various joints. Design and detail precast and activities by innovation.

Detailed Syllabus:-

UNIT- I

Introduction -Types of prefabrication, prefabrication systems and structural schemes- Disuniting of structures Structural behaviour of precast structures - Specific requirements for planning and layout of prefabrication plant - IS Code specifications

UNIT- II

Precast Cast Elements - Handling and erection stresses- Application of prestressing of roof members; floor systems two way load bearing slabs, pre stressed beam , Precast column -precast shear walls Wall panels, hipped plate and shell structures.

UNIT- III

Prefabricated Design - Designing and detailing prefabricated units for 1) industrial structures 2) Multistorey buildings and 3) Water tanks, silos bunkers etc., 4) Application of prestressed concrete in prefabrication.

UNIT- IV

Prefabricated Buildings - Production, Transportation & erection- Shuttering and mould design Dimensional tolerances- Erection of R.C. Structures, Total prefabricated buildings assembly Process

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 8th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-807(D) /19	Interior Architecture & Space Programming	2 L, 1T	Int : Ext 40:60	03

Course Objective: To appreciate the complexities and constraints in the design and execution of architectural interiors..

Course Outcomes: At the end of the course, the students will able the Interior Design principles and their applications in interiors, and to foster creative ability and inculcate skills to understand and conceive architectural design.

Detailed Syllabus:-

UNIT- I

Introduction to Interior Architectural Design Definition of interior design, Interior architectural design process, vocabulary of design in terms of principles and elements, Introduction to the design of interior spaces as related to typologies and functions, themes and concepts - Study and design

UNIT- II

Elements of Interior Architecture - Enclosing Elements Introduction to various elements of interiors like floors, ceilings, walls, staircases, openings, interior service elements, incidental elements etc., and various methods of their treatment involving use of materials and methods of cons

UNIT- III

V. Elements of Interior Architecture – lighting accessories & interior landscaping Study of interior lighting, different types of lighting their effects types of lighting fixtures. Other elements of interiors like accessories used for enhancement of interiors, paintings, objects-de-art, etc. Interior landscaping, elements like rocks, plants, water, flowers, fountains, paving, artifacts, etc. their physical properties, effects on spaces and design values.

UNIT- IV

Elements of Interior Architecture - Space Programming Study of the relationship between furniture and spaces, human movements & furniture design as related to human comfort. Function, materials and methods of construction, changing trends and lifestyles, innovations and design ideas. Study on furniture for specific types of interiors like office furniture, children's furniture, residential furniture, display systems, etc. Design Projects on Residential, Commercial and Office Interiors.

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 8th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-807(E) /19	Building Information Modelling (BIM)/ Advance Computer Software's	2 L, 1T	Int : Ext 40:60	03

Course Objective: To make students understand the principles and implications of Building Information and Modelling (BIM) in Architecture profession.

Course Outcomes: At the end of the course, the students will able to Understand that BIM is used to collaboration - between engineers, owners, architects and contractors in a three dimensional environment (common data environment), and it shares information across these disciplines. BIM is the management of information through the whole life cycle of a built asset, from initial design all the way through to construction, maintaining and finally de-commissioning.

Detailed Syllabus:-

UNIT- I

Introduction to Building Information Modelling. The advantages of using the software. Introduce various software like Revit, ArchiCAD, etc. Special Features of Revit Architecture Understanding Revit Elements Working in one model with many views Using Ribbon & Quick Access Toolbar(QAT) Using Project Browser

UNIT- II

WORKING WITH PROJECT: Configure Project UNITS Settings Adding Levels Referring Layout With Temporary Dimensions Adding Columns. MODELLING WALLS, DOORS AND WINDOWS: Adding Walls Wall Properties And Types Using Modifying Tools Adding Doors And Windows All Joints LINKING IN REVIT Linking AutoCAD Drawing Files Import Tips Create A Group

UNIT- III

MODELLING ROOF, CEILING & FLOOR Working with Roofs Working with Ceilings Working with Floors WORKING WITH STAIRS Working with Stairs Adding Railings to Stairs

UNIT- IV

VIEWS, VISIBILITY & GRAPHIC CONTROLS Hiding and Isolating objects in a model Displaying Objects Above-Below in Plan Views DOCUMENTATION Adding Schedule Views Modifying Schedule Views Exporting to AutoCAD Adding Text

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.
The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design. Presentation would be made by the teacher. The students are expected to do library studies and seminars (Reports, Tutorials and PPT's) on varied topics to supplement the information base and make more interactive.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 8th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits	Duration of Exam
UC/BARCH-808(A) - 808 (E)/19	Open Elective- III/Mooc Swayam	2L	2	Certificate from concerned/ imparting agency

The list of major domain of MOOC's courses are attached in the preamble & the department will have a MOOC coordinator who will display the list of MOOC in every semester (PTU guidelines will be followed.)

The concerned teacher may prepare a detailed syllabus based on the subject selected from the elective while referring to books given or any additional, references. Use of teaching methods to make subject interesting and absorbing is expected. Knowledge application shall be the part of sessional work.

9th Semester

IK Gujral Punjab Technical University
Bachelors of Architecture
(Constituent Campus)

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 9th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 7	Duration of Exam
UC/BARCH-901/19	Architectural Design -VIII	1 L, 6 ST	Int : Ext 60:40	External viva voce

Course objective: To make students understand the complexities of large-scale architectural interventions in specific urban settings, having multiple Dimensions.

Course Outcome: To let the students explore how to harmonise and contextualise the architectural design with the immediate built environs and the larger Design criteria's.

Detailed Syllabus:-

UNIT-I Public Buildings

The design problems will include Public Buildings with diverse activities involving:

- **Higher Order of Office/Commercial complex,** -City Centre, District Centre, Large Exhibition Complexes, Convention Centre Multiplexes

UNIT-II Urban Design

- **Campus designing** - University, Professional Institutes, Integrated Campus etc.
- **Capital Complex**-Secretariat, High Court, Assembly

Evaluation Criteria for Exam / Question Paper Setting:-

External marks shall be awarded through viva- voce conducted by the External Jury appointed by the University of the work done by the student during the semester . The answer sheet shall be retained at the institute after the exam for the conduct of viva voce.

Instructions for the Faculty –

Design faculty is required to take a well prepared well researched lecture on the said topics and should encourage and motivate the students for taking up live projects of their immediate surroundings (Identifying need, Framing requirements and solution for the same, and it should be evaluated as one of the assignment).

Minimum Two projects should be done by the student. The Projects selected should be based on realistic contexts. The design submitted shall include complete project drawings, perspective, models and details Teaching focus will be to promote design concept based on Site, Urban design, Landscaping, Traffic and Transportation, Climate, Energy, Services, Safety and compliance with Building Regulations etc

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 9th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 5	Duration of Exam
UC/BARCH-902/19	Research Methodology & Dissertation	2 L, 3 ST	Int : Ext 60:40	03 Hours Theory exams. The dissertation to be marked by taking viva voce

Course Objective: To give an overview of the research methodology and explain the technique of defining a research problem. To explain the functions of the literature review in research. To explain carrying out a literature search, its review, developing theoretical and conceptual frameworks and writing a review.

Course Outcomes: At the end of the course, the students will able to – explain key research concepts and issues read, comprehend, and explain research articles in their academic discipline.

Detailed Syllabus:-

UNIT- I

Introduction and Design of research: Meaning, objectives and significance of research, types and parameters of research, research process, identification and definition of the research problem, definition of construct and variables, pure and applied research design, exploratory and descriptive design methodology, qualitative vs. quantitative research methodology, field studies, field experiments vs. laboratory experiments, research design in social and physical sciences.

UNIT- II

Data and Methods of Data Collection: Survey, assessment and analysis: data collection, primary and secondary sources of data, Collection of primary data through questionnaire and schedules. Collection of secondary data, processing and analysis of data. Sample survey, simple random sampling, stratified random sampling, systematic sampling, cluster sampling, area sampling and multistage sampling. Pilot survey, scaling techniques, validity & reliability

UNIT- III

Data Analysis: Procedure for testing of hypothesis, the null hypothesis, determining levels of significance, type i and ii errors, grouped data distribution, measures of central tendency, measures of spread/dispersion, normal distribution, analysis of variance: one way, two way, chi square test and its application, students 'T' distribution, non-parametric statistical techniques, binomial test. Correlation and regression analysis – discriminate analysis – factor analysis – cluster analysis, measures of relationship.

UNIT- IV

Research report preparation and presentation: Review of literature: historical survey and its necessity, layout of research plan, meaning, techniques and precautions of interpretation, types of report: technical report, popular report, report writing – layout of research report, mechanics of writing a research report. Writing bibliography and references.

Evaluation Criteria for Exam Question Paper Setting:-

The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.

The question bank will be submitted to the university within one month of the commencement of the semester.

Instructions for the Faculty –

Teaching in the subject will be a combination of Expert lectures and application based study

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 9th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-903/19	Construction Management	2 L, 1T	Int : Ext 40:60	03 Hours Theory exams

Course Objective: To make student understand and appreciate the role and importance of management in building construction.

Course Outcomes: At the end of the course, the students will able to do cost analysis of construction work and understand the role of architect and aware about the measures to be adopted for the safe and quality construction.

Detailed Syllabus:-

UNIT- I

Project Management- Concept, Background, Purpose, Aim, Objectives, Scope and Significance
Role of Architect in Construction/Project Management
Resources of Construction Industry.
Construction stages, Construction team, Equipment Management

UNIT- II

Project Management Techniques- CPM, PERT
CPM Analysis- Critical Path, Float Computation Result Sheet etc

UNIT- III

Financing of Project, Depreciation and Break even Cost analysis
Cost Control- Budget, Accounting System, Problems
Computer Application in Construction Management

UNIT- IV

Quality and Safety- Objectives, Issues, Organising for Quality and Safety
Stages of Inspection and Quality control
Planning of Temporary Services at the site.
Security of Materials and Manpower at building site.

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.

The question bank will be submitted to the university within one month of the commencement of the semester.

Instructions for the Faculty –

Teaching in the subject will be a combination of Expert lectures and visits to Construction /Project Sites and discussions with Project Managers. Students would be required to do a case study of an ongoing construction project

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 9th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 5	Duration of Exam
UC/BARCH-904/19	Building Construction & Materials-VIII	1 L, 4ST	Int : Ext 60:40	04 Hours

Course Objective: To make students aware and learn about advance construction techniques and preparing project drawings.

Course Outcomes: At the end of the course, the students will able to prepare a set of working drawings for a high rise large span/ specialized building project, by using advanced constructional & structural building techniques.

Detailed Syllabus:-

UNIT-I

- Complete Set of Working Drawing of a major design project of 8th semester including Site plan , Foundation plans, Elevations and Sections .
- Commercial Kitchen- Study, designing and working drawing
- Introduction to Pre- stressing and Post- Tensioning

UNIT-II

- Materials used in building façade with construction details.
- Modular Construction- Objectives, basic principles, planning and structural modules.
- Mass production, Transportation, Storage and handling of construction materials.
- Curtain Walls- Role, functions, materials, principles and details
- Elevators, Escalators, Travellators, Refuse Chutes- The study and details of Construction.

Evaluation Criteria for Exam / Question Paper Setting:-

- Two questions are to be set from each Unit.
- Students are required to attempt Three Questions with One question from each Unit.

Instructions for the Faculty –

All efforts must be directed to make the learning an enriching experience. Teaching in the subject shall be a combination of field/ site visits, visit to industrial units involved in mass production and preparing construction plates on above topics. Market Survey to study complete range of products available in the market under different trade names with their manufacturing details, specifications and performance. Field visit to study the complete process of construction.

Core References: The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 9th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 03	Duration of Exam
UC/BARCH- 905 (A)	Town & Country Planning	2 L, 1T	Int : Ext 40:60	03 Hours

Course Objective: To make students understand the role and importance of Town Planning in the evolution of Human Settlements and Urban Forms in the Historical and Modern Context.

Course Outcomes: At the end of the course, the students will be aware and familiar with Town Planning concepts, Methodologies, Norms, case studies.

Detailed Syllabus:-

UNIT-I

- Introduction, Role, Importance and Scope of **Town Planning**
- Planning Principals of Human Settlement in **Nile Valley, Greek and Roman Periods.**
- **Town Planning in India**- Vedic period, Indus Valley, Islamic, Medieval and Colonial Period.
- **Classification of Human Settlements** based on Road Pattern, Form, Use, Scale/ Population etc.

UNIT-II

- **Master Plan –** Objectives, Role, Importance and Methodology.
- **Regional Plan** - Objectives, Role, Importance and Methodology

UNIT-III

- **Planning Concepts**- Garden City, Linear City, Industrial City and Sustainable City and Neighbourhood
- **Existing Towns and Cities in India**- Problems, Remedies etc.
- **Urbanization –** Causes, Pattern and Effect in India.

UNIT-IV

- **Study of New Towns in India** – Chandigarh, New Delhi & Gandhi Nagar.
- **Town Planning in Punjab**
- Role of **Development Authorities** in Urban Development.

Evaluation Criteria for Exam / Question Paper Setting:-
The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit. The question bank will be submitted to university within one month of commencement of semester.

Instructions for the Faculty –
Subject shall be taught through the combination of Guest Lectures, Field visits, Visits to the Project Sites. Focus on the live study and application of the subject into the architecture design.

Core References:
The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 9th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 03	Duration of Exam
UC/BARCH- 905 (B)	Art & Architecture	2 L, 1T	Int : Ext 40:60	03 Hours

Course Objective: · The knowledge and understanding of the universal and timeless qualities that identify all great art. To introduce the students to the importance of art in today's world and the purposes art has served from pre - historic through modern times in a variety of cultures both western and oriental. To understand artistic intent and expression through basic element of art and architecture and to increase appreciation of art in today's society.

Course Outcomes: At the end of the course, the students will able to – explain key research concepts of Art in Architecture.

Detailed Syllabus:-

UNIT- I
Introduction & Terminology Grammar of the language of art - Natural, Realistic, Symbolic, Abstract, Modern and Contemporary.

UNIT- II
Ideologies of Aesthetics in Art Complete understanding of Ideologies of aesthetics in art while discussing the art of Western and Oriental. Plato, Aristotle, Baumgartan, I.A. Richards, Leo Tolstoy, Sigmund Freud. Shading: Six limbs of Indian painting. Rasa theory of 'Bharat Muni'. Iconography.

UNIT- III
Development of Art Development of art over the period of time. Tracking the progress in art in aspects of the Functional diversity of styles, Art as form of social consciousness, Impact of Cultural and Religion on art, Understanding the role of art in contemporary society.

UNIT- IV
Building Crafts: Craft and technology and its role in enhancing Interior Architecture, Best studies related to craft sector from Gujarat, Rajasthan, Uttarakhand, Etc. , Continuity and revival of craft, , Interventions : Process /product design/ technology/marketing based.

Evaluation Criteria for Exam Question Paper Setting:-
The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.
The question bank will be submitted to the university within one month of the commencement of the semester.

Instructions for the Faculty –
Presentation would be made by the teacher. The students are expected to do library studies and seminars (Reports, Tutorials and PPT's) on varied topics to supplement the information base and make more interactive.

Core References:
The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 9th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 03	Duration of Exam
UC/BARCH- 905 (C)	Building Maintenance	2 L, 1T	Int : Ext 40:60	03 Hours

Course Objective: · To make student understand the role and importance of the building maintenance in built environment and learn about all aspects of building defects. This subject will exposure the Architect's role to pressure the building from deterioration.

Course Outcomes: At the end of the course, the students will able to acquire basic knowledge to carry out short daily inspections to detect the building maintenance problems and suggest remedies to preserve the building.

Detailed Syllabus:-

UNIT- I

- Maintenance- Introduction, Need, Scope, Importance& Role of an Architect.
- Maintenance-Economic and Social significance
- Maintenance - Problems and issues related to materials, design and detailing.

UNIT- II

- Climate- Effect on the life cycle of buildings.
- Deterioration and Decay of buildings- Typology, Reasons, Prevention
- Deterioration and Decay- Causes, Effect, Remedies

UNIT- III

- Defects in Buildings-Efflorescence, Dampness, Settlement, Cracks, Corrosion etc - causes, effects, preventive and remedy
- Retrofitting of Buildings for Structural safety

UNIT- IV

- Building service and maintenance -- water supply, sewerage, and Sanitation system.
- Case study of any existing building

Evaluation Criteria for Exam Question Paper Setting:-
The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.
The question bank will be submitted to the university within one month of the commencement of the semester.
Instructions for the Faculty –

Teaching in the subject will be a combination of Expert lectures, Specific case studies and field visits to buildings in deteriorating conditions. Lectures from representatives of industry and visits to the industrial units involved in producing materials to make buildings safe will be made integral part of teaching

Core References:
The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 9th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 03	Duration of Exam
UC/BARCH- 905 (D)	Graphics & Communication Design	2 L, 1T	Int : Ext 40:60	03 Hours

Note - Detailed syllabus for the subject shall be finalized on year to year basis depending upon the expertise available. The experts in the field will deliver lectures and demonstrate the latest techniques for development of skills.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 9th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 03	Duration of Exam
UC/BARCH- 905 (E)	Advance Digital Architecture	2 L, 1T	Int : Ext 40:60	03 Hours

Course Objective: To introduce the concept of digital design and fabrication. To introduce the concept of energy modelling and analysis in design.

Course Outcomes: At the end of the course, the students will able to – understand the fundamental of digital architecture with the help of application to software.

Detailed Syllabus:-

UNIT- I

Fundamentals • Introduction, History and Scope of Digital Technologies in Architecture • Digital design media • CAD Models: Presentation, visualization, drafting, modelling • CAD vs. BIM

UNIT- II

Computational Design • Roles of Computing in Architectural Design • Study of Computational models • Foundations in computational geometry • Design models: Formation models, Generative models, Performance model • Computation design styles, parametrises • Scripting and Algorithms: principles of algorithmic design, visual programming • Artificial Intelligence

UNIT- III

Fabrication • Prototyping, Additive and subtractive manufacturing • Materiality • Digital production and fabrication

UNIT- IV

Performance Models • Concepts in energy modelling and analysis of sources, such as electricity, HVAC, Acoustics, day lighting, wind etc. • Green Building Concepts, LEED, BREEAM, IGBC, GRIHA • ECBC and its application in Indian Buildings

Evaluation Criteria for Exam Question Paper Setting:-

The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.
The question bank will be submitted to the university within one month of the commencement of the semester.

Instructions for the Faculty –

Teaching in the subject will be a combination of Lectures, presentations, Assignments, live project work.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 9th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 03	Duration of Exam
UC/BARCH- 906 (A)	Traffic & Transportation	2 L, 1T	Int : Ext 40:60	03 Hours

Course Objective: To make the students conversant with methods, techniques of traffic and transportation, the socio-economic issues related to the movement of humans and goods in general and in urban areas in particular.

Course Outcomes: At the end of the course, the students will able to – Exposure to basic understanding of transport planning and management in urban areas.

Detailed Syllabus:-.

UNIT- I

- Need, Role and Importance of traffic and transportation planning
- Urban & regional transport systems, Comparative advantages and disadvantages
- Role of Bicycle as a preferred mode of transport including planning for Bi-cycles
- Understand transport and socioeconomic activities, future developments.

UNIT- II

- Problems encountered in inter and intra-city transport system
- Accidents: Causes and remedial measures
- Traffic control devices
- Signage: Function and classification

UNIT- III

- Geometric design of roads and intersections, Rotaries, over bridges, underpasses, flyovers
- Roads design elements: Functional classification and alignment, Intersections
- Urban traffic and transport problems

UNIT- IV

- Traffic Survey: Volume, speed and delay, origin and destination
- Parking survey
- National Transport Policy

Evaluation Criteria for Exam Question Paper Setting:-

The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.

The question bank will be submitted to the university within one month of the commencement of the semester.

Instructions for the Faculty –

Teaching in the subject will be a combination of Expert lectures and visits to areas of high traffic.

Students should be made to do a small traffic survey in a congested area.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 9th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 03	Duration of Exam
UC/BARCH- 906 (B)	Contemporary Indian Architecture (Current Trends)	2 L, 1T	Int : Ext 40:60	03 Hours

Course Objective: Introduce the initiation and development of Modern Architecture in the subcontinent and contemporary architecture in India and the world.

Course Outcomes: At the end of the course, the students will able to – Ability to understand the role of societal developments as predicators of change in architectural paradigms through the study of Modern Architecture in the sub-continent and contemporary architecture of India and the world

Detailed Syllabus:-

UNIT- I

- The initiation and development of Modern Architecture in the sub-continent. Critical Regionalism revisited in the context of the sub-continent.
- Impact of globalization, energy crisis and climate change on architecture.

UNIT- II

- Overview of post-independence architecture with the help of selected examples of master architects of the period.
- Contemporary world architecture to include notions of the Post-modern City, Deconstruction, Globalization, Post-modern Tradition, Revisiting of Tradition, Cradle to cradle Design, Post-modern Ecology etc. through selected examples.

UNIT- III

Contemporary Building Materials

- Study the needs ultra-performance materials in building design as a substitute for special performance, thermal/sound/moisture protection, fitting, equipment and furnishing.
- The types of advanced concrete - bendable concrete, light transmitting concrete, translucent concrete, pervious concrete, eco-cement etc. and types of reinforcement materials, properties and performance in concrete reinforcement. Aramid fibres, bio-steel, Carbon / Graphite Fibres and fibre-glass etc.
- Use of composite materials namely Polymer Matrix Composites (PMCs), Fibre Reinforced Polymers (FRPs) along with cement, steel, aluminium, wood, glass for thermal insulation, fire protection, coating and painting and structural monitoring etc.

UNIT- IV

- Contemporary current trends

Evaluation Criteria for Exam Question Paper Setting:-

The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.

The question bank will be submitted to the university within one month of the commencement of the semester.

Instructions for the Faculty – Teaching in the subject will be a combination of Expert lectures and application based study

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 9th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 03	Duration of Exam
UC/BARCH- 906 (C)	Building System Integration & Management	2 L, 1T	Int : Ext 40:60	03 Hours

Course Objective: To understand intelligent building systems and its relevance in modern times and to develop an understanding of automated buildings systems and sensors.

Course Outcomes: At the end of the course, the students will able to – Understanding of approach for effective energy management in building through automated systems and sensors.

Detailed Syllabus:-

UNIT- I

- Study of automated buildings, responsive buildings.
- Introduction to facility management. Study of management of facilities, planning and operational techniques in various models of building intelligence.

UNIT- II

- Study development of various control systems, computer-integrated building (from single function systems to integrated solutions).
- Use building intelligence in energy management.

UNIT- III

- Case study of intelligent building systems in India with issues related to site, shell, skin, services and technology, intelligent design and construction, effective space utilization, expectations of user, effective communication of architectural concepts to user, locating people and information.

UNIT- IV

- Introduction to Building automation in general and understanding the issues related to the control system in a building.
- Basic concept of computerized control systems, network designed to monitor and control various systems for lighting, ventilation, alarms & security, communication, etc.
- Issues related to illumination and lighting. Systems to allow / control Natural light. Aperture/openings and shading devices control systems based on automated systems.
- Issues related to systems of communication (mechanical systems).

Evaluation Criteria for Exam Question Paper Setting:-

The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.

The question bank will be submitted to the university within one month of the commencement of the semester.

Instructions for the Faculty –

Teaching in the subject will be a combination of Expert lectures and should conduct live projects.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 9th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 03	Duration of Exam
UC/BARCH- 906 (D)	Cost effective Construction	2 L, 1T	Int : Ext 40:60	03 Hours

Course Objective: To make the students aware of the use of conventional and non-conventional resources for low cost construction and to understand the various low cost design systems and to understand use of materials, construction and execution techniques in design of low cost buildings.
Course Outcomes: At the end of the course, the students will able to – understand the Low Cost Building Techniques in architecture.

Detailed Syllabus: -

UNIT- I

- An introduction to the subject to understand the various building techniques adopted in different climatic zones of the country, which resulting in varied vernacular expressions.
- Use of cost effective technologies through the use of local materials, up gradation of traditional technologies, prefabrication etc.

UNIT- II

- Need for low cost construction, both in the rural, the urban sectors and related issue and challenges.
- Low-cost building construction systems, methods & techniques. Introduction to low-cost buildings, building components influencing cost of buildings.
- Study Modular coordination in building design, prefabrication- total and partial, and impact of prefabrication on employment.

UNIT- III

- Study of usages pattern of low cost buildings by the habitants.
- Comparative analysis of building materials and costing.
- Research and development by various organizations in the country and foreign countries to reduce the cost.

UNIT- IV

- Works of Laurie Baker, Hassan Fathy , Revathi kamath, Nari Gandhi etc
- Case study of low-cost building projects in India with issues related to site, material, services, technology, and construction, and expectations of user. Post-occupancy evaluations of such projects.

Evaluation Criteria for Exam Question Paper Setting:-
The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.
The question bank will be submitted to the university within one month of the commencement of the semester.

Instructions for the Faculty –
Market survey, sample collection of various building materials of cost effective, know-how of application, exploring the characteristics of each material Site visits for studying and understanding application of low cost building materials.

Core References:
The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 9th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 03	Duration of Exam
UC/BARCH- 906 (E)	Building Industry	2 L, 1T	Int : Ext 40:60	03 Hours

Course Objective: To give the knowledge and awareness of building industry

Course Outcomes: At the end of the course, the students will able to gain the knowledge of building industry.

Detailed Syllabus:-

UNIT- I

Introduction : Review of the nature of building Industry within socio-economic, technological & developmental factors in rural and urban sectors. **Component of Building Industry** : Various segments of building industry and their inter play. Housing as an integrated industry. National policy for building industry.

UNIT- II

Rural Building Industry : Need and demand of rural building industry within the socio-economic and cultural set up. Role of Rural Building Industry in national policy of Rural Development.

Research & Development : Role of professional bodies, research organisation, programmes of extension and development of public & private sectors. Design Techniques i.e. coordination, standardisation, prefabrication, system design etc. together with constructional & operational management for the development of development of building industry.

UNIT- III

Building Material Industry : Importance of Building material industry. Production and stock of indigenous & modern materials to meet national and individual needs for speed & economy.

UNIT- IV

Finances and Building Industry : National allocation, financial organisation, Govt. incentives, self-help, community participation, cooperative & individual efforts.

Evaluation Criteria for Exam Question Paper Setting:-

The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit. The question bank will be submitted to the university within one month of the commencement of the semester.

Instructions for the Faculty –

Teaching in the subject will be a combination of Expert lectures and application based study

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 8th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits	Duration of Exam
UC/BARCH- 907 (A)-907 (E)/19	Open Elective- IV/Mooc Swayam	2L	2	Certificate from concerned/ imparting agency

The list of major domain of MOOC's courses are attached in the preamble & the department will have a MOOC coordinator who will display the list of MOOC in every semester.

The concerned teacher may prepare a detailed syllabus based on the subject selected from the elective while referring to books given or any additional, references. Use of teaching methods to make subject interesting and absorbing is expected. Knowledge application shall be the part of sessional work.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 9th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 03	Duration of Exam
UC/BARCH- 908/19	Educational Tour III/Summer Training III/ Vacation Assignment-III	2 L, 1T	100 Marks	

The education tour to one day to one or two week duration be encouraged to be undertaken by the students under faculty supervision . During or after the semester the term report shall be submitted to the class coordinator for assessment.

The students be encourage to undertake approx. 04 week summer training in a design / construction office. alternatively student should also be encouraged to do any online course of similar duration during the summer vacation.

Vacation assignment are be assign by the HoD in consultation with class coordinator before the commencement of the vacation and submitted in the following semester to the class coordinator for assessment.

10th Semester 2019

IK Gujral Punjab Technical University
Bachelors of Architecture
(Constituent Campus)

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 10th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 18	Duration of Exam
UC/BARCH-1001/19	Architectural Design (Thesis Project) -IX	18 ST	Int : Ext 60:40	External Jury Viva Voce

Course Objective: The Architectural Thesis is the culmination of the development of the acquired knowledge, attitudes and skills over the course of studies in architecture. The scope and extent of the thesis work shall be substantial and realisable in application or concept as appropriate to the selected area of work.

Course Outcome: It is an opportunity for exercising skilled options in the field, based on the personal knowledge and inclinations, and for testing design ability. Its expected to demonstrate ability through practical approach, in our built environment.

Detailed Syllabus:-

A. Thesis project will comprise of the following:

- **An Illustrated Report**- which will include the validity and scope of the chosen project, methodology, prototype studies, site analysis, client's and architect's briefs, delineation of programme and design criteria.
- **A fully worked-out Design Proposal**- including consideration of site planning structures, services, and any other aspect/specific to the project.

B. Stages of Work:

The entire process of Thesis Design shall be divided into four distinct stages involving:

1. **Approval of Project:**
   - The intent of the thesis project as well as the criteria for selection of the project will be introduced to the students around the 6th week of the previous semester, i.e.9th Semester B.Arch.
   - Before the closing of the 9th Semester, students will be required to submit brief write-up on three projects out of which one will be approved.
2. **Rough Report:**
   - Rough Report shall comprise of all analytical aspects of the project including Synopsis, Library studies, Prototype studies, Site analysis, Delineation of Building Program, etc.
3. **Evolution of Design** :
   - Shall be worked out in minimum of four stages.
4. **Draft of Final Report**:
   - Shall include Evolution of Design, Final Report, Drawings and Model, to be evaluated through a University Examination- Through a visual presentation/ viva-voce.

NOTE

- Students will be required to submit two identical copies of the final report along with a soft copy, on a standard format prescribed in the thesis programme issued by the Thesis Coordinator.
- The report must also included A-3 size copies of all final drawings and at least two photographs of the final model/models.
- The original copy of the report, the final drawings and models will be returned to the student after the declaration of the result. The photocopy along with the soft copy of the report and drawings will be retained for reference in the college library.

C. SCHEDULE OF SUBMISSIONS/EXAMINATION

(Note: Commencement of the semester will be considered as Zero week.)

Stages of work	Time allocated	Max. Marks
1. Sessional Work		
(a) Rough report	**6 weeks**	**100**
(i) Synopsis	1 week	20
(ii) Preliminary Library studies	2 weeks	20
(iii) Site analysis, Prototypes/ Additional Library studies	2 weeks	30
(iv) Programme Formulation	1 week	30
(b) Evolution of Design	**5 weeks**	**150**
(i) Design Criteria and Concept		25
(ii) Design Proposal Stage-1		25
(iii) Design Proposal Stage-2		50
(iv) Pre-final Design		50
(c) Draft Final Report with drawings. (Incorporating improvements suggested in Rough Report, Design Criteria and explanatory Sketches of Evolution of Design)	**5 week**	**50**
2. External Examination		**250**

SUBMISSION REQUIREMENTS

- Students are required to submit the Final Report, all final drawings and models in the standard format prescribed in the Thesis programme.
- The students would also be required to submit an abstract of the thesis project.
- Submission will be made one day before the date of examination.
- All buildings should have accessibility to the physically challenged persons.

EVALUATION METHODOLOGY:

- The thesis studio will be conducted under the overall coordination of the Thesis Coordinator. In addition, two members of the Visiting Faculty would also be associated throughout the duration of the studio. Each student will be assigned a Thesis Guide (from amongst the faculty) who will supervise the progress of the student's work on a regular basis.

- Approval of the thesis project/topic will be done by the Principal/HOD, the Thesis Coordinator and the concerned Thesis Guide.
- All stages of Sessional work will be evaluated jointly by the Principal/HOD and the entire studio team (Thesis Coordinator, Visiting Faculty and the concerned Thesis Guide).
- Marks awarded at each stage will be based on the average of those awarded by all jury members.
- Jury for the External Examination will comprise the Principal, Thesis Coordinator and two External Examiners appointed by the University.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 10th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-1002/19	Professional Practice	2L, 1 S/T	Int : Ext 40:60	03

Course Objective: To make students understand and familiar with different aspects of Architectural Practice and Professional Responsibilities.

Course Outcomes: At the end of the course, the students will be able to understand about the professional and legal aspects of architectural practice in India. Understand the duties and liabilities of an architect, his client and the contractor with respect to the various issues of the architectural practice.

Detailed Syllabus:-

UNIT- I

- **Architects** – Role, Functions, Social Obligations, Profession Activities, Responsibilities etc.
- **Indian Architects Act 1972** – Scope, Objective, Role & Importance in managing the profession and professionals.
- **Council of Architecture** – Constitution, Role and Function, Registration of Architects etc.
- **Indian Institute of Architects** – History, Objectives, Role and Function in promoting Architectural profession and education.

UNIT- II

- **Architectural Practice** – Type of Practices, Setting office, Office Organization, Management, Income Tax, Service Tax etc.
- **Architectural Competition** – Importance, Type, Procedure, Guidelines framed by Council of Architectural to conduct competition, including Role of Board of Assessors, Professional Adviser and Technical Advisers.
- **Code of Professional conduct**
- Conditions Governing the **Appointment of Architects**, Scale of Professional charges, Execution of work and payment of fee.

UNIT- III

- Duties, Responsibilities and Liabilities of **Client, Architect, Contractor** and their mutual relationship.
- **Tenders**- Type, Process, Scrutiny and Selection of Contractor, Pre Qualification and Registration of Contractor.
- Concept of **Contract.**

UNIT- IV

- **Copy Right Act** as Applicable to Architectural work.
- **Complaints** – Procedure for lodging complaints, and their Resolution based on Indian Architects Act 1972
- **Valuation** - Purpose, Objective, Types and Method of valuation.
- Arbitration and Reconciliation Act.

Evaluation Criteria for Exam Question Paper Setting:-

The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.

The question bank will be submitted to the university within one month of the commencement of the semester.

Instructions for the Faculty –

Teaching in the subject will be a combination of Expert lectures from Architects working in the profession, visits to the offices and discussions with reputed Architects. Students should be encouraged to attend professional meets organized by the professional bodies including IIA, COA, IOE etc.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 10th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-1003/19	Disaster Management	2L, 1 S/T	Int : Ext 40:60	03

Course Objective: To make the students to understand the various types of disaster, to create awareness about natural disasters, factors their cause and to foster knowledge about strategies for disaster prevention and management.

Course Outcomes: At the end of the course, the students will able to – understand various types of disasters their causes, significance and effects. Students will gain an understanding of various Disaster Preparedness, Response, management and mitigation. The students will enable to carried out the design and planning solutions for reduction of risk and damages caused shall be exposed through case studies.

Detailed Syllabus:-

UNIT- I

Introduction to Hazards & Disasters , What is Disaster? Their Causes, consequences and after effects of disasters like various types of Natural hazards and disasters- Earthquake, cyclone, floods, droughts, landslides, lightning, tsunami etc. & Man induced hazards & disasters- Introduction to disaster management - Indian scenario, understanding of disaster, hazard and its classification, vulnerability, capacity, risk.

UNIT- II

Disaster Preparedness, Response and Mitigation : Disaster management Act and policy, Guidelines, NDMA, Disaster Management Mechanisms: national, state and district levels; select global practices; disaster and development; physical planning and disaster management plans; various role players in disaster management, relief measures of pre and post disaster – NGOs / CBOs and Armed Forces; Community Based Disaster Preparedness (CBDP), Disaster Risk Mitigation; Preparing hazard zone maps, Predictability/ forecasting &warning, Community preparedness.

UNIT- III

Shape and form of building and their services to undertake the disaster Building shapes, Architectural features and design of building in seismic zones. Affects of Earthquake on buildings. Indian Seismic Codes. Different types of Building such as structures of - Brick Masonry, Stone Masonry, Reinforced concrete etc. Elements to make buildings Earthquake Safe. Fire: Causes and precautions for fire safety in different type of building. BIS code for fire safety. Flood: Design of building for flood zones. Design, construction and detailing of buildings, materials and methods to be adopted for different disasters discussed in unit 1 and retrofitting of disaster affected buildings.

UNIT- IV

GIS & Information Technology in disaster management, Role of GIS and Information Technology Components in Preparedness, Risk Assessment, Response and Recovery Phases of Disaster; Disaster Damage Assessment; applications and case studies.

Evaluation Criteria for Exam Question Paper Setting:-

The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.

The question bank will be submitted to the university within one month of the commencement of the semester.

Instructions for the Faculty –

Teaching in the subject will be a combination of Expert lectures, Site visits to Structurally safe buildings and discussions with reputed Architects. Students should be encouraged to attend professional meets organized by the professional bodies including IIA, COA, IOE etc. on Disaster resistant buildings.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 10th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-1004 (A)	Building Economics	2L, 1 S/T	Int : Ext 40:60	03

Course Objective: To create awareness, impart knowledge and promote understanding of the role and importance of Economy and Cost –effectiveness in the buildings to promote sustainability .

Course Outcomes: At the end of the course, the students will able to understand the use of conventional and non- conventional construction techniques for making the building having' value for money'.

Detailed Syllabus:-

UNIT- I

- **Building Economics**-Introduction, Definition, Role, Scope, Importance and Principles of **building economics.**
- **Cost of Building**- Components, Impact of various components ,Types of costs including Construction Cost, Maintenance cost, Operational Cost etc

UNIT- II

- **Cost Management-** Aims, Objectives, Need , Principles, Procedure, Cost Analysis.
- Analysis of Comparative Economics of **Low Rise and High Rise Buildings**

UNIT- III

- **Technology** – Role, Importance, Use, Up-gradation of local Technologies to make buildings cost- effective.
- **Materials-** Role, Importance, Innovative building materials ,up-gradation of local materials, Comparative analysis of available building materials
- **Construction Techniques**- Study of Innovative Building Techniques for cost reduction with comparative merits and Demerits

UNIT- IV

- Introduction, Role and Importance of **Modular construction, Pre- Engineered Buildings, Mass Production, Standardization** etc in cost effectiveness
- **Cost Reduction** -through Planning, Designing and Specification of buildings involving Space Optimization and Structural Innovations
- **Space Norms**- Role and importance of Space Norms for Cost –reduction, Principles for defining Space Norms, Norms defined in NBC.

Evaluation Criteria for Exam Question Paper Setting:-

The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.

The question bank will be submitted to the university within one month of the commencement of the semester.

Instructions for the Faculty –

Teaching in the subject will be a combination of Expert lectures, Specific case studies and field visits to Low Cost buildings. Lectures from representatives of industry and visits to the industrial units involved in producing building materials will be made integral part of teaching. Students would also be encouraged to attend building material exhibitions etc.

(can be edited)

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 10th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-1004 (B)	Contemporary World Architecture	2L, 1 S/T	Int : Ext 40:60	03

Course Objective: Develop an awareness of contemporary architecture. Update their comprehensive knowledge of architecture

Course Outcomes: At the end of the course, the students will able to – Knowledge about contemporary phase of architecture . Understandings of current trends and styles in architecture.

Detailed Syllabus:-

UNIT- I

Evolution through the formal and the informal built-form, forces that shaped both. Cross connections showing form determining factors. Manifestations and significant theories, pragmatic and the abstract. Theories seen independently of the styles as classified later in history. Brief review of state of art of designing and the theories of Design and Architecture studied during the B. Arch. degree program, with emphasis on 20th century up to present period.

UNIT- II

Influencing factors in the shaping of contemporary world architecture , study of examples of modern structures in this period and analyze the influences with respect to Advances in Construction Technology and new materials of construction.

UNIT- III

Influencing factors in the shaping of contemporary world architecture ,study of examples of modern structures in this period and analyze the influences with respect to ,Architectural expression influenced by vernacular and regional Architecture.

UNIT- IV

Influencing factors in the shaping of contemporary world architecture , study of examples of modern structures in this period and analyze the influences with respect to, Architectural expression influenced by world as a global village.

Evaluation Criteria for Exam Question Paper Setting:-

The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit. The question bank will be submitted to the university within one month of the commencement of the semester.

Instructions for the Faculty –

Teaching in the subject will be a combination of Expert lectures, Specific case studies and field visits to Low Cost buildings. Lectures from representatives of industry and visits to the industrial units involved in producing building materials will be made integral part of teaching. Students would also be encouraged to attend building material exhibitions etc.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 10th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-1004 (C)	High Rise Buildings	2L, 1 S/T	Int : Ext 40:60	03

Course objective: To make students aware and understand the context of planning, designing and construction of High Rise buildings and their role and importance in shaping the Human Settlements and Urban Form in the Modern Context.

Course Outcome: Students are expected to acquire in depth knowledge about services, safety, security, transport, etc regarding High rise buildings

Detailed Syllabus:-

UNIT- I

- **High Rise Buildings**- Introduction, Historical perspective, Origin, Definition, Role, Importance , Limitations, Advantages and Disadvantages
- **Planning /Designing** of High Rise Building
- **Construction** of High Rise Buildings

UNIT- II

- **Building Technologies** used in the Construction
- **Building Materials** used in the Construction
- Study of **Building Services** in the High Rise Buildings

UNIT- III

- **Fire Safety and Structural safety** of High Rise Buildings
- Study of **Legal Framework** governing the High Rise Buildings

UNIT- IV

- Study of **National Building Code**, 2005
- Study of famous **High Rise** Buildings-Burj Khalifa, Sears Towers, Empire State Building, World Trade Centre, Imperial Towers and Orchid Woods Mumbai .

Evaluation Criteria for Exam Question Paper Setting:-

The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.

The question bank will be submitted to the university within one month of the commencement of the semester.

Instructions for the Faculty –

Teaching in the subject will be a combination of invited lectures , visit to Multi- Storeyed/ High Rise Buildings and library studies/power point presentations of High Rise Buildings mentioned above.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 10th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-1004 (D)	Architecture Journalism & Photography	2L, 1 S/T	Int : Ext 40:60	03

Note - Detailed syllabus for the subject shall be finalized on year to year basis depending upon the expertise available. The experts in the field will deliver lectures and demonstrate the latest techniques for development of skills.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 10th Semester)

Course Code	Course Name	L, S/T, P/FW, ST	Credits - 3	Duration of Exam
UC/BARCH-1004 (E)	Futuristic Architecture	2L, 1 S/T	Int : Ext 40:60	03

Course Objective: To gain the knowledge and awareness of futuristic material and architecture.

Course Outcomes: At the end of the course, the students will able to use the knowledge of futuristic material and architecture in the projects

Detailed Syllabus:-

UNIT I
Future concepts envisioned by earlier theorists and architects like Antonio Saint Elia and F.L. Wright

UNIT II
Emerging architectural paradigms such as programme generated architecture, dynamic architectural systems, virtuality, Trans architecture, data driven structures and 'glocal' approach through the study of relevant projects.

UNIT III
Evolution of contemporary architectural concepts-historical revival biomimicry adaptive reuse and low cost buildings; Futuristic building materials: Buildings; Futuristic building materials: Building tectonics and systems

UNIT IV
Study of specific building types-houses, office spaces, public buildings, skyscrapers and transportation hubs through various projects . Sustainable buildings including energy efficiency, Zero Energy and Energy Plus buildings and resource conservation

Evaluation Criteria for Exam Question Paper Setting:-
The examiner is required to set eight questions with a minimum of two from each unit. Students are required to attempt five questions with a minimum of one from each unit.
The question bank will be submitted to the university within one month of the commencement of the semester.

Instructions for the Faculty –
Teaching in the subject will be a combination of invited lectures , visit to Multi- Storeyed/ High Rise Buildings and library studies/power point presentations of High Rise Buildings mentioned above.

Core References:
The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University Kapurthala
Bachelor's of Architecture (B.Arch): Teaching Scheme 2019

Third Semester

Course Type	Sr. no	Course Code	Course Title	Load Allocations					Marks	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem/ Tut	P/F W	Stu	Total	Int : Ext		
PC	1	UC/BARCH-301/19	Architectural Design -III	1	-	-	5	06	60:40	6	06 + External Viva Voce
BS &AE	2	UC/BARCH-302/19	Building Construction & Materials-III	1	-	-	3	04	60:40	4	04
	3	UC/BARCH-303/19	Structure Systems-II	1	-	-	1	02	100	2	External Viva Voce
	4	UC/BARCH-304/19	Structure Design-I	2	2	-	-	04	40:60	3	03
	5	UC/BARCH-305/19	Surveying & Leveling	2	-	2	-	04	40:60	3	03
PAECC	6	UC/BARCH-306/19	Climate & Architecture-I	2	2	-	-	04	40:60	3	03
SEC	7	UC/BARCH-307/19	Computer Application-I	1	-	2	-	03	100	2	External Viva Voce
	8	UC/BARCH-308/19	* Educational Tour I/ Summer Training-I / Vacation Assignment-I	-	-	-	-	-	100	1	Internal Assessment by jury Viva-voce
			Total					27		24	

Note: * UC/BARCH-308/19 is carried out in the intervening period of 2nd and 3rd semester, the evaluation of report/s to be done in the 3rd semester.

3rd Semester

IK Gujral Punjab Technical University
Bachelors of Architecture
(Constituent Campus)

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 3rd Semester)

Course Code	Course Name	L, Sem/Tut, P/FW, Stu	Credits	Duration of Exam
UC/BARCH-301/19	Architectural Design -III	1L, 5 stu	6	06 Hours + External Viva Voce

Course Objective: To make students understand and appreciate the constraints in the designing of a building of a small scale with reference to function, form and structure. And to create awareness about the role and Importance of physical factors in Architectural Design e.g. orientation, ventilation, adequate protection from natural elements, and human dimensions in various postures (in applied form), their relation to everyday utilities including table, chair, bed etc. Introduction to barrier free buildings at a small scale.

Course Outcomes: At the end of the course, the students will able understand the nuances of house, school, cafeteria and post office design. They will also be well versed with various physical factors of architecture design and equipped with the norms of barrier free design.

Detailed Syllabus:-

UNIT-I
Design of House, Primary School, without urban regulatory controls with emphasis on environmental and ecological issues.

UNIT-II
Design of Cafeteria, Post Office etc,

Evaluation Criteria for Exam / Question Paper Setting:-

One compulsory question is to be set from the entire syllabus. The answer sheet shall be retained at the institute after the exam for conduct of the viva voce which will be conducted at the institute level by Internal / External jury members appointed in consultation with the university from the approved panel list of examiners.

Instructions for the Faculty –

Design faculty should encourage and motivate the students for taking up live projects of their immediate surroundings (Identifying need, Framing requirements and solution for the same, and it should be evaluated as one of the assignment)It is recommended that 2-3 projects to be handled by students from the topic given above. Library and prototype studies should be carried out for remaining projects. Model and perspective should be made integral part of project presentation.

Core References:

The assigned faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library/on web portals/online. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Department Library & Academic department.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 3rd Semester)

Course Code	Course Name	L, Sem/Tut, P/FW, Stu	Credits	Duration of Exam
UC/BARCH-302/19	Building Construction & Materials-III	1 L, 3 Stu	4	03

Course Objective: To make students understand and appreciate, various methods of building construction in coordination with the building materials and science related to them. Students will gain knowledge on the various applications of timber products and Glass in buildings.

Course Outcomes: At the end of the course student will able to become aware of the different types of timber roofing systems and trusses. Understand details for trusses, staircases, sliding doors, sliding folding doors, partitions, panelling, work out and apply appropriate details for building construction of the same.

This subject consists of two parts

PART - I Building Materials with emphasis on learning of material.
PART - II Building Construction with emphasis on construction drawings by pencil only.

Detailed Syllabus:-

PART – A: BUILDING MATERIAL

UNIT-I

(a) **Glass**

- Glass as a building material, Classification, Composition, Properties and Use of Glass.
- Character and uses of various types of Glass and their application in buildings

UNIT-II

(b) **Timber Products**

- Manufacturing process and qualities of Decorative and Commercial timber product used in buildings

Note: All contemporary uses must be studied of glass and timber products.

PART – B: BUILDING CONSTRUCTION

UNIT-III

(a) Section of a Double Storeyed Building through Toilet and Stair case showing the details of Foundation, D.P.C, Floor, Window, Lintel, Chhajja, R.C.C Roof, Terrace and Parapet.
(b) Types of Staircases-- Design and detailing of RCC and Timber Staircases.
(c) R.C.C. Form work and Shuttering details for- Column (square and round), Slab and Beam, Wall, Staircase etc.

UNIT-IV

(a) Flooring

- Construction of PCC, Terrazzo, (Cast-in-situ and tiles) and various types of Stone flooring. Contemporary floor must also be studied.

(b) Cladding

- Cladding of interior and exterior facades in various commonly used materials

Evaluation Criteria for Exam / Question Paper Setting:-

Total eight questions are to be set two from each unit & students are required to attempt total four questions i.e. one from each unit. The distribution of marks for **Part A** (Unit I&II): **Part B** (Unit III&IV) is 12: 28 marks.

Instructions for the Faculty –

All efforts must be directed to make the learning an enriching experience. Market Survey to study complete range of products available in the market under different trade names with their manufacturing details, specifications and performance. Field visit to study the complete process of lying of reinforcement and concreting. Preparing Construction sheets on above topics. Emphasis shall be laid on understating of complete construction details of Double Storeyed structure.

Core References:

The assigned faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library/on web portals/online. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Department Library & Academic department.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 3rd Semester)

Course Code	Course Name	L/ Sem/Tut, P/FW, Stu	Credits	Duration of Exam
UC/BARCH-303/19	Structure Systems-II	1 L, 1 Tut	2	Ext Viva Voce

Course Objective: To make students learn basics principles of structure systems with emphasis on learning by doing and making 3-D models to provide the student with different spatial experience.

Course Outcomes:

At the end of the course, the students will be able to gain ability to comprehend the Design erection process and application of large span structures. To understand the need and importance of prefabricated components and structures as an alternative to cast in situ construction process. To understand the needs, requirements, and selection for various types of structures systems.

UNIT-I

- Structures acting mainly through Composition of Compression and Tension members such as Vector-active structure system in co-active tension and compression in;
  a) Space frames.
  b) Trusses (Timber & Steel).
  c) Domes (Ribbed & Geodesic)

UNIT-II

- Structure acting mainly through axis:
  a) Lattice structure
  b) Polyhedron structure
  c) Tree type

Evaluation Criteria for Exam / Question Paper Setting:-

Evaluation is through External Viva Voice of the work done by the student during the semester

Instructions for the Faculty –

Emphasis must be given on learning by doing i.e preparing the models of the structure system covered. Students be encourage to present a PPT on the topics assigned and submit its report for external evaluation.

Core References:
The assigned faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library/on web portals/online. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Department Library & Academic department.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 3rd Semester)

Course Code	Course Name	L, Sem/Tut, P/FW, Stu	Credits	Duration of Exam
UC/BARCH-304/19	Structure Design-I	2 L, 2 Tut	03	03

Course Objective:

The aim and objective of the course on structure design-I is to get introduced to basic structural members in masonry and timber, to give knowledge of design of timber beams in buildings and to enable understanding of basic concepts of shear force and bending moment.

Course Outcomes: At the end of the course, the students will able to Design timber beams by applying codal provisions, Design Masonry foundation and retaining walls, Analyse indeterminate structures and to calculate shear force and bending moment in determinate structures.

Detailed Syllabus: -

UNIT-I

Design of Foundations in Masonry work-- Safe Bearing Capacity, Load on Foundations, Depth of Foundation, Rankine's formula, Footing Sections.

Design of Retaining Walls in Masonry-- Loads, Resultant Pressure, Stability of Structure, Middle Third Rule, Design examples.

UNIT – II

Bending Moment/ Shear Force, Type of Supports, Loads and Beams, BM and SF diagram for Simply Supported Beams with Point Load and Uniformly Distributed Load--Design examples

UNIT – III

Design of Simple Timber Beam, Bending Stress Check, Shear Check, Deflection Check, Bearing Check, Design examples with UDL and Concentrated load.

UNIT – IV

Analysis of portal frame by slope deflection method (Non-sway)

Evaluation Criteria for Exam / Question Paper Setting: -
The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit

Instructions for the Faculty-
The students of architecture must be made clear about the design concepts and tutorials be made an integral part of learning.

Core References:

The assigned faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library/on web portals/online. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Department Library & Academic department.

Bachelor of Architecture (B. Arch. 3rd Semester)

Course Code	Course Name	L, Sem/Tut, P/FW, Stu	Credits	Duration of Exam
UC/BARCH-305/19	Surveying & Leveling	2 L, 2 FW	3	03

Course Objective: To make students understand and learn about and basics of surveying and levelling and its application in designing of buildings.

Course Outcomes: At the end of the course, the students will able to do chain surveying, compass survey, plane table survey, levelling, contouring. Students will have knowledge of survey instruments also.

Detailed Syllabus: -

UNIT-I
Chain Surveying: Principal of chain surveying, description of different equipment, Methods of chaining, selection of base line and stations, obstacles in chaining, ranging rods.
Prismatic Compass survey: Description of Prismatic & surveyors compass methods of traversing, local attractions and its elimination, adjustment of closing error.

UNIT-II
Plane Table survey: Description of different equipment's, different methods of plane tabling, Two point and three-point problems and their solutions.
Levelling: Methods of levelling, Sensitivity of bubble tube, setting out grade lines, permanent adjustment of levelling instruments.

UNIT-III
Contouring: Setting out contour gradient, different method of contouring, characteristics and uses of contours.

UNIT-IV
Survey Instruments: Abney level, Theodolite, Total Station: Introduction, Various components, Operation, Advantages/ Disadvantages

Evaluation Criteria for Exam / Question Paper Setting: -
The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

Instructions for the Faculty –
Faculty should conduct survey on ground. All concepts in theory must be put in practical site.

Core References:

The assigned faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library/on web portals/online. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Department Library & Academic department.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 3rd Semester)

Course Code	Course Name	L, Sem/Tut, P/FW, Stu	Credits	Duration of Exam
UC/BARCH-306/19	Climate & Architecture-I	2 L, 2 Tut	3	3

Course Objective:
To make students understand the role and importance of climate as one of the major determinant of built form and to familiarize them with various climate controlling devices.

Course Outcomes: At the end of the course, the students will able to understand the fundamental of climatology as important consideration in architecture design and it will orient his/ her proposal accordingly. Like thermal comfort, design sensitivity towards climate and climatic zones.

Detailed Syllabus:-

UNIT-I Fundamentals
Introduction to climatology, Importance of studying Building climatology, Elements of climate, Global climate factors, Interrelationship of climatic elements and Psychometric chart

UNIT-II Movement of Sun
Understanding the movement of Sun, Solar Chart and its importance, Importance of understanding the optimum orientation of buildings and their forms in relation to Sun, Concept and Design of Shading Devices

UNIT-III Thermal Comfort
Definition and explanation of Thermal Comfort, Human Heat Balance and Physical Comfort, Relationship of Climatic Elements with Thermal Comfort, Thermal Stress Index.

UNIT-IV Climatic Zones
Tropics and its Climatic zones, Macro and Micro Climate(site climate), Role of Climate with respect to Shelter, Study of various Indigenous Shelters in response to various Climate Zones in the Tropical belt of India, Principles of Architectural Design in different Climatic Zones in India (As per National Building Code)
Introduction to computer software's dealing with fundamental climatology

Evaluation Criteria for Exam / Question Paper Setting:-

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

Instructions for the Faculty –

Focus on the live study and application of the subject into the architecture design.

Core References:
The assigned faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library/on web portals/online. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Department Library & Academic department.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 3rd Semester)

Course Code	Course Name	L, Sem/Tut, P/FW, Stu	Credits	Duration of Exam
UC/BARCH-307/19	Computer Application-I	1, -, 2, -,	2	Ext Viva Voce

Course Objective To make students aware of the role and importance of Computers in the field of Architecture.

Course Outcomes: At the end of the course, the students will able to understand basics of Computers hardware, operating systems and operative languages, being a fundamental course the students will be introduced to the basic of hardware and software. They will be introduced to 2D presentation..

Detailed Syllabus:-

UNIT-I

- Introduction to MS Office tools (power point presentation, word file/excel etc.)
- Basic commands like copy, paste, stretch, offset, move fillet, extend, trim and other 2D commands.
- 2D modelling in Auto Cad, Auto Cad Revit, Google Sketch up,
- Drawing the basic Plans, Sections, and Elevations.

UNIT-II

- Basic Text writing and dimensioning of the Plans, Elevation and Sections.
- Basic hatching and filling of the Walls in the Plans, Elevations and Sections.
- Basic rendering in the Auto Cad and in other Software's in 2D/3D such as Photoshop, Revit, and Sketch up etc.

Evaluation Criteria for Exam / Question Paper Setting:-

Evaluation is through Internal Viva Voice of the work done by the student during the semester.

Instructions for the Faculty –

Emphasis should be laid on developing the skill pertaining to 2-D on the Software's and basic introduction to 3-D Software's.

IK Gujral Punjab Technical University
Bachelor of Architecture (B. Arch. 3rd Semester)

Course Code	Course Name	L, Sem/Tut, P/FW, Stu	Credits	Duration of Exam
UC/BARCH-308/19	* Educational Tour I/Summer Training-I / Vacation Assignment-I		1	Int. Viva Voce

The education tour is encouraged to be undertaken by the students under faculty supervision. During or after the semester the tour report shall be submitted to the class coordinator for assessment.

The students should be encourage undertaking approx. 04 week summer training in a design / construction/allied office. Alternatively student should also be encouraged to do any online course of similar duration during the summer vacation.

Vacation assignment is to be assign by the HoD in consultation with class coordinator before the commencement of the vacation and submitted in the following semester to the class coordinator for assessment.

Master in Architecture (Architectural Education & Research)

Objective, Teaching Scheme & Syllabus

Nature of Study:

Master of Architecture (Architectural Education & Research), abbreviated as M. Arch (AER), is a Master's level degree course in architecture offered by the department of architecture, School of Built Environment, IKGPTU Mohali Campus-II. It offers specialization in architectural education & research.

This course aims to develop an effective, passionate, and motivated teachers in the field of Architectural Education, who demonstrate an innovative, reflective, and research-based approach to teaching. The course focuses on the development of holistic learning among future educators. Architecture Education is expected to feed the society with a human resource that is not just trained in Architecture Skills, but contextual and proficient for being a step ahead in steering the dynamics of creating a built environment for better living.

Vision

The vision of M. Arch (AER) prepares students as a better teacher and help architectural institutions to produce quality architects.

Mission

M. Architecture in Education and research is specially designed for a number of B.Arch students who are interested in teaching and want to contribute to expanding knowledge discipline of architecture education. Our mission is to equip our students with the best of pedagogy skills.

Program Objectives:

The objective is to offer a professional course to Architects who wish to be associated with teaching, also the course is to impart professional training in strengthening their expertise in studio-based & theory-based subjects in addition to attitude values in the students & bridge the gap between theory and practice.

Learning Outcomes:

The objectives of the program are translated into a number of learning outcomes. M. Arch (AER) Course address the Physiological, Philosophical, and Social aspects of Architecture education.

- Students will develop a good understanding of architectural pedagogy. This course is an integration of inputs from Architecture as well as from the field of education.
- To fill the gap between academics and the profession.

- Problem-solving skills, professional judgment, and ability to take the initiative and make appropriate decisions in complex and unpredictable circumstances.
- An ability to evaluate research and a variety of types of information and evidence critically.
- During the course, the students will be provided with ample opportunities to interact with the subject experts, relevant organizations.
- The course enables the students to gain real-time experience through their involvement in the ongoing or live classroom experience.

Highlights of the Scheme

M. Arch (AER) is a two-year course consisting of four semesters in regular mode & three years consisting of six semesters in the part-time mode & mix mode.

I. Regular mode - 02 years (PG Diploma Exit after 01 years)

II. Part-time mode - 03 years (PG Diploma Exit after 1.5 years)

III. Mix Mode - PG Diploma after 01 years of study in regular mode and M. Arch (AER) in another 1.5 years in Part-Time mode. the second year in part-time mode.

The teaching curriculum involves a thorough understanding of fundamentals, contemporary trends, and teaching methods in Architecture Pedagogy, with an enhanced emphasis on design. The curriculum helps to develop aspects of critical thinking & inquiry, creativity & innovation, research and investigation, collaboration & civic engagement, and environmental awareness among others. Students learn under supervised teaching experience, engagement through an active and diverse curriculum, and independent research projects in consultation with faculty members. Rigorous exercises are carried out on current trends in Architecture, Research, and Pedagogical processes so that the students develop a knowledge base and a personality well equipped to train the budding Architects.

The broad course structure is as follows:

The **first semester** is focused on the Architecture education scenario in India. It introduces the fundamentals of various aspects of architecture education, such as contemporary architecture, educational technology, research methodology-I, professional electives, and provision of MOOC'S courses. The studio focuses on understanding the current status of architecture education & its background and also focusing on social perception towards architects and architecture.

The **second semester** focuses on curriculum design and consists of related subjects, such as contemporary architecture II, the psychology of teaching and learning, architecture research methodology. It offers electives as well as MOOCs out of which students are expected to choose one. (as recommended by UGC under choice-based credit system).

The **third semester** focuses on the Role & Responsibility of Statutory Bodies related to education. Subjects offered in this semester are dissertation – I, instructional methods, professional electives, and open electives.

In the **fourth semester**, students would be required to undertake a thesis and institutional internship.

Each course is divided into four sections consisting of the detail, objective, units, and suggested readings. The subject syllabus is broken into progressive sections through the units, However, it may be noted that the syllabus covered is not exhaustive and the individual subject teacher may augment the syllabus as per the requirement. It is kept dynamic intentionally to address the changing needs of the program. In such cases, prior concurrence of the Head of the Department is necessary. However, the focus of teaching will revolve around looking critically and objectively at the 'Best Practices' being used at the local and global level

The syllabus is designed to develop the strong communication, interpersonal, advocacy, and analytical skills of the student. The subject faculty are encouraged to assess the student's progress throughout the semester through seminars, debates, group discussion /individual presentations, term papers, written exams (open or closed book), take-home exams, report submissions, viva voce, etc.

ANNEXURE-A.

Options of delivering M.Arch (AER) Course in various mode

A- In regular mode
B- In Part time mode
C- In mix mode

(Note- The academic regulation for PG Program in Architecture defines the mid level exit and re-entry options to the students)

Sr. No.	Subject		Credit	A				B						C				
				Regular mode				Part Time mode						PG diploma in Regular mode and Stage-II in Part time mode				
				1	2	3	4	1	2	3	4	5	6	1	2	3	4	5
				July	Jan	July	Jan	July	Jan	July	Jan	July	Jan	July	Jan	July	Jan	july
				Stage-I		Stage-II		Stage-I			Stage-II			Stage-I		Stage-II		
1	Studio		18	6	6	6	-	4	4	4	3	3	-	6	6	3	3	-
2	Contemporary Arch		3	3	-	-	-	3	-	-	-	-	-	3	-	-	-	-
3	Architecture Appriciation		3	-	-	3	-	-	-	-	-	3	-	-	-	3		
4	Education Technology		3	3	-	-	-	3	-	-	-	-	-	3	-	-	-	-
5	Research Method		3	3	-	-	-	-	-	3	-	-	-	3	-	-	-	-
6	Psychology of Teaching		3	-	3	-	-	-	3	-	-	-	-	-	3	-	-	-
7	Arch Research Method		3	-	3	-	-	-	-	-	3	-	-	-	3	-	-	-
8	Instruction Methods		3	-	-	3	-	-	-	-	-	3	-	-	-	3	-	-
9	Professional Elective / MOOC		9	3	3	3	-	3	3	3	-	-	-	3	3	3	-	-
10	Open Elective / MOOC		3	-	-	3	-	-	-	-	-	3	-	-	-	-	-	3
11	Education Tour/ summer training/Vacation work		1	-	-	1	-	-	-	1		-	-	-	-	1	-	-
11	Teaching / institution Practice		5	-	-	-	5	-	-	-	5	-	-	-	-	-	5	-
12	Dissertation-I (Term Paper)		3	-	3	-	-	-	-	3	-	-	-	-	3	-		-
13	Dissertation-II (Thesis)		12	-	-	-	12	-	-	-	-	2	10	-	-	-	2	10
	Total		**72**	**18**	**18**	**19**	**17**	**13**	**10**	**14**	**11**	**14**	**10**	**18**	**18**	**13**	**10**	**13**

FIRST YEAR
1st and 2nd SEMESTER MASTER OF ARCHITECTURE (ARCHITECTURAL EDUCATION AND RESEARCH)

1st SEMESTER

Course Type	S. No	Course Code	Course Title	Load Allocations					Marks %	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem / Tut	P/ FW	Stu	Total	Int : Ext		
PC	1	UC/MARCH-101/20	Studio-I	2	-	-	4	06	60:40	6	Viva Voce/ Ext. Jury
	2	UC/MARCH-102/20	Contemporary Architecture-I	2	2	-	-	04	40:60	3	03
Edu. & Res	3	UC/MARCH-103/20	Educational Technology	2	2	-	-	04	40:60	3	03
	4	UC/MARCH-104/20	Research Methodology-I	2	2	-	-	04	40:60	3	03
PE (Choose one)		UC/MARCH/ PE-106-10/20	Professional Elective- I	2	2	-	-	04	40:60	3	03
	5	UC/MARCH/ MOOC-111-20	MOOC-I						-		Certificate from concerned/ imparting agency
		Total						22		18	

2nd SEMESTER

Course Type	S. No	Course Code	Course Title	Load Allocations					Marks %	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem / Tut	P/ FW	Stu	Total	Int : Ext		
PC	1	UC/MARCH-201/20	Studio – II	2	-	-	4	06	60:40	6	Viva Voce/ Ext. Jury
	2	UC/MARCH-202/20	Dissertation - I	2	2	-	-	04	40:60	3	03
Edu. & Res	3	UC/MARCH-203/20	Psychological of Teaching Learning	2	2	-	-	04	40:60	3	03
	4	UC/MARCH-204/20	Architecture Research Methodology-II	2	2		-	04	40:60	3	03
PE (Choose one)		UC/MARCH-206-10/ 20	Professional Elective- I	2	2	-	-	04	40:60	3	03
	5	UC/MARCH-211-20 /20	MOOC-II						40:60		Certificate from concerned/ imparting agency
SEC	6	----	*Educational Tour/ Summer Training/ Vacation Assignment	-	-	-	-	-	-	-	Evaluation will be done in 3rd sem
		Total						22		18	

Elective I: 1. Fundamentals of built environment and resource conservation 2. Recent trends in sustainable architecture 3. Architectural Software
Elective II: 1. Architecture appreciation 2. Geomatics techniques for architects 3. Building Industry

SECOND YEAR

3rd and 4th SEMESTER MASTER OF ARCHITECTURE (ARCHITECTURAL EDUCATION AND RESEARCH)

3rd SEMESTER

Course Type	S. No	Course Code	Course Title	Load Allocations					Marks %	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem / Tut	P/ FW	Stu	Total	Int : Ext		
PC	1	UC/MARCH-301/20	Studio – III	2	-	-	4	06	60:40	6	Viva Voce/ Ext. Jury
Edu. & Res	2	UC/MARCH-302/20	Architecture Appreciation	2	2	-	-	04	60:40	3	Viva Voce/ Ext. Jury
	3	UC/MARCH-303/20	Instructional methods	2	2	-	-	04	40:60	3	03
		UC/MARCH-304/20	*Educational Tour/ Summer Training/ Vacation Assignment	-	-	-	-	-	100	1	Viva Voce/ Int. Jury
PE (Choose one)	4	UC/MARCH-305-10 /20	Professional Elective- I (Ref Table-)	2	2	-	-	04	40:60	3	03
		UC/MARCH-321-30 /20	MOOC-III (Ref Table-)						-		Certificate from concerned/ imparting agency
OE (Choose one)	6	UC/MARCH-311-15 /20	Open Elective- I (Ref Table-)	2	2	-	-	04	40:60	3	03
		UC/MARCH-331-40 /20	MOOC-IV (Ref Table-)						-		Certificate from concerned/ imparting agency
			Total					22	-	19	

4TH SEMESTER

Course Type	S. No	Course Code	Course Title	Load Allocations					Marks %	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem / Tut	P/ FW	Stu	Total	Int : Ext		
	1	UC/MARCH-401/20	Teaching Practice (Institutional Internship)	-	2	-	6	8	60:40	5	Viva Voce/ Ext. Jury
	2	UC/MARCH-402/20	Dissertation-II	-	2	-	10	12	60:40	12	Viva Voce/ Ext. Jury
			Total					20		17	
			Grand Total							72	

Note: Table-1 (Abbreviation Used)

Abbreviation Used in the teaching scheme			
PC	Professional Core	L	Lecture
Edu. Research	Education & Research	Sem/Tut	Seminar/ Tutorial
SEC	Skill Enhancement Courses	P/FW	Practical/ Field Work
PE	Professional Electives	Stu	Studio
OE	Open Elective	Int.	Internal
MOOC	Massive Open Online Courses	Ext.	External

Table no-1 Codes assigned to MOOC's of M. Architecture (AER).

Sr. No.	Track	MOOC (Stream)	1st SEM UC/MARCH/ MOOC-	2nd SEM UC/MARCH/ MOOC	3rd SEM UC/MARCH/ MOOC-	
			MooC -I	MooC-II	MooC- III	Mooc-IV
1	T1	Education/Teaching	111	211	321	331
2	T2	Allied Architecture/Design / Arts /Planning	112	212	322	332
3	T3	Energy/Environment	113	213	323	333
4	T4	Building Science & Applied Engineering / Building Services / Building Technology	114	214	324	334
5	T5	Computer Science/ Programming/ Data Sciences/ Software's/ Interruptive Technologies	115	215	325	335
6	T6	Management/ Business/ Entrepreneurship	116	216	326	336
7	T7	Humanities/Social Sciences	117	217	327	337
8	T8	Journalism/Mass Communication / Media	118	218	328	338
9	T9	Finance/Commerce/Economics Accounts	119	219	329	339
10	T10	Legal Services/Administration/ Personal Development / Health & Happiness / Miscellaneous	120	220	330	340

Table no-2 Codes assigned to Professional/Open Electives in M. Architecture (AER).

	PROFESSIONAL ELECTIVE-I UC/MARCH	PROFESSIONAL ELECTIVE -II UC/MARCH	PROFESSIONAL ELECTIVE –III UC/MARCH	OPEN ELECTIVE-I UC/MARCH
	Traditional Indian Architecture	Climate & Architecture Climatology	Futuristic Architecture	Creative Writing – I
Code	105	205	305	311
	Ecology	Fundamental of Built environment & Resource Conservation	Green Buildings & Rating Systems	Health Education – I
Code	106	206	306	312
	Principles of Human Settlement	Smart Cities	Housing Policies	Human resource development & organization behavior
Code	107	207	307	313
	Building Industry	Geo special Technologies	Risk Management	Sociology & Psychology V/S Architecture
Code	108	208	308	314
	Architecture Appreciation & Criticism	Guidance & Counseling	E- Resources/ E- Learning	Thought Processes/ Mind Management
Code	109	209	309	315
	Digital Architecture/Advance Computer software	Environment & social issues in Architecture	Architecture Journalism & Photography	Life Skills
Code	110	201	310	316

Syllabus of

Masters of Architecture AER
(Architecture Education & Research)

Batch 2020 onwards

By

Masters of Architecture AER
IK Gujral Punjab Technical University

IK Gujral Punjab Technical University

Masters of Architecture AER (M. Arch. AER 1st Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MARCH-101/20	Studio I	L-2, S-4	6	Viva only

Course Objective:

The syllabus has been designed to attain the following objectives:

- Understand the Architectural Education system in India & its future scope.
- To make the students understand the diversity and fast-paced dynamics of the Architecture profession to be adopted and incorporated in Architecture Education.
- To understand the social work environments of architects.

Course Outcomes:

At the end of the course, the students will able to :

- Have a fairly good idea of the scenario of architecture education in the country
- Understand the basic issues and challenges of imparting Architecture Education in India
- They will also be clear about the perception of society (general public) about the Architecture and architect and the role and responsibility & the need to update Architecture education continuously to cope with dynamic practice.

Instruction to the Faculty

Stress must be laid on individual/ collective research & its presentation in the form seminar in the class & finally getting it published.

Detailed Syllabus:

UNIT-I (Architecture Education)

- Review of Architecture Education in India:
  A self-learning exercise is to be introduced in the 'Architecture education scenario in India'. The students encouraged through group discussions to raise the issues and then chose any specific issue and do deeper investigation/research on it. The literature available needs to be reviewed and presented in the class during group discussion.
- Nature and Future scope of Architecture Education in the country

UNIT- II

Society's perception of Architecture and Architect: A survey needs to be conducted with a proper sample size to understand the core issues. Related to and presented in the lass.

Classroom research on improving the teaching-learning methods(Understand the traits of a good teacher and fundamentals of Classroom management).

Evaluation Criteria for Examination/ Question Paper Setting:

Selection of topic and its Understanding (introduction and submission of Synopsis) Preliminary Seminar, Final Seminar, Report Submission Only Seminar Presentations, and written reports to be evaluated for internal/external assessment.

Note: Students would be required to choose one topic from each Unit in consultation with the subject In-charge& thoroughly research it before presenting it in the class as a seminar & try to publish it thereafter. A book review on the topic of architecture education and related issues should be undertaken as part of an internal assessment.

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Masters of Architecture AER (M. Arch. AER 1st Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MARCH-103/20	**Educational Technology**	2 – L, 2 - T	3	03 Hours

Course Objective:

To introduce the students to the importance of Education Technology in Architecture Education. To understand Architecture Education with technology and digitization and the way it has revolutionized Architectural thinking.

Course Outcomes: At the end of the course, the students will able to

- Incorporate innovative instructional technologies through project-based activities.
- Collaborate in online discussions about the field of educational technology.
- Synthesize information from various texts and online sources.
- Deliver oral presentation through collaborative, online learning software applications.
- Be equipped to prepare MOOC'S

Detailed Syllabus:

UNIT- I (Introduction)

- Educational Technology and its Components
- Systems approach & Multimedia approach in Educational Technology
- Definition, the distinction between hardware and software approach, combination approach, Technology of education, and technology in education.

UNIT- II (Smart Classroom Interaction)

- Concept, Process, and Elements of Communication
- Psychology of Communication and its application in Educational Technology
- Models of Communication, Factors, and Barriers
- Classroom Interaction, Classroom Interaction Analysis -Flander Interaction category system.

UNIT-III (Latest Trends in Educational Technology)

- Personalized system of instruction (PSI) -Programmed Learning
- CCTV, Computer Assisted Instruction (CAI)
- Modern trends in multimedia
- Virtual Reality & Virtual Environments/classroom
- Educational Satellite, Interactive Video, Tele and Video conferencing - Web 2.0 in Education, E-learning, e-teaching, digital conferences
- Course management soft wares

UNIT-IV (Digital Architecture)

- Virtual Classrooms and laboratories: Concepts and consideration for the virtual classroom and virtual laboratories.
- Use of Digital Resources: Open courseware- NPTEL, MIT, YouTube, courses, etc. National Knowledge networks, E-Repository, Digital libraries.
- Effective Integration of Digital Courses, Digital Tools

IK Gujral Punjab Technical University

Masters of Architecture AER (M. Arch. AER 1st Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MARCH-102/20	Contemporary Architecture- I	L-2, S-2	3	03 Hours

Course Objectives:

Study the contemporary architecture of India in general & northern region in particular & the role of materials and technological know-how on the outcome.

The architecture of Chandigarh will also be understood

Course Outcome:

At the end of the course, the students will able to –

- Understand various trends of contemporary architecture in their immediate surroundings.
- It will be possible
- To identify & point out various influences (social, political, cultural, etc) on the architecture of India in general & northern region in particular.
- They will understand the impact of globalization and the contribution of material & new technologies in shaping the architecture.

Methodology:

Stress must be laid on individual/ collective research & its presentation in the form seminar in the class & finally getting it published.

Detailed Syllabus:

Overview of Indian architecture in terms of major factors & drivers of architectural form, space, climate & cultural, social, political influences, and use of materials and construction techniques related to it.

UNIT-I

Medieval Architecture, Islamic Period, Colonial Period/ Pre-independence period
Post Colonial Period/ Post-independence era

UNIT-II

Vernacular/ Tradition Indian Architecture and their impact on a contemporary scenario.

UNIT-III

Globalization &it's impact of architecture through case/net/library studies of eminent architects work.

UNIT-IV

Live study of contemporary buildings of the immediate surroundings: the focus on the architecture of the northern region in general & Chandigarh in particular

Assignment

Students would be required to choose one topic from each Unit in consultation with the subject In-charge& thoroughly research it before presenting it in the class as a seminar & try to publish it thereafter.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department/ university library, on web portals/online (i.e. E-resource). The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

Evaluation Criteria for Exam / Question Paper Setting:

A total of eight questions are to be set two from each unit & students are required to attempt a total of four questions i.e. one from each unit.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

Evaluation Criteria for Exam / Question Paper Setting:

A total of eight questions are to be set two from each unit & students are required to attempt a total of four questions i.e. one from each unit.

IK Gujral Punjab Technical University

Masters of Architecture AER (M. Arch. AER 1st Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MARCH-104/20	**Research Methodology - I**	**3 – L, 1- T**	**3**	**03 Hours**

Course Objective:

- To develop an understanding of the basic framework of the research process
- To develop an understanding of various research designs and techniques
- To identify various sources of information for literature review and data collection
- To develop an understanding of the ethical dimensions of conducting applied research
- Appreciate the components of scholarly writing and evaluate its quality

Course Outcomes:

At the end of the course, the students will able to –

- Design framework/ techniques for the research process
- Demonstrate knowledge of research processes (reading, evaluating, and developing)
- Perform literature reviews using print and online databases
- Explain the rationale for research ethics
- Formulate the research in the form of thesis/ report

Detailed Syllabus:

UNIT- I

- **Introduction to Research Methodology:** Research problem and research design; formulation of hypotheses and statement of the research problem; ethical issues in research – authenticity, plagiarism, manipulation of data in research.
- **Research Methods:** Research techniques and tools; types of research methods: quantitative and qualitative; interpretive-historical; descriptive – survey analysis, case study, content analysis, co-relational, ex-post-facto, experimental, simulation, logical argumentation.

UNIT- II

- **Data Analysis:** Statistical methods - sampling techniques – probability sampling (simple random sampling, systematic sampling, stratified random sampling, cluster, and multi-stage sampling) and non-probability sampling (convenience of incidental, volunteer sampling, judgment or purposive sampling, quota or chunk sampling, snowball sampling); tools for collection of data – questionnaires, observation schedules, interview schedules, standardized tests, focused group discussion; Computer Processing.

UNIT- III

- **Data Interpretation:** Interpretation and presentation of results; overview of descriptive statistics (Measures of central tendency and dispersion); overview of inferential statistics (Co-relational Techniques - rank-order correlation, Karl Pearson's correlation coefficient, chi-square)

UNIT-IV

- **Developing a Research Proposal**: Format of the research proposal; individual research proposal; institutional proposal
- **Report writing:** Structure and components of scientific & technical report and thesis – different steps in the preparation, layout, language, quality of illustrations, and tables (bibliography, referencing, and footnotes).

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

Evaluation Criteria for Exam / Question Paper Setting:

A total of eight questions are to be set two from each unit & students are required to attempt a total of four questions i.e. one from each unit.

IK Gujral Punjab Technical University

Masters of Architecture AER (M. Arch. AER 1st Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MARCH/ PE-106-10/20	**Fundamentals of the built environment and resource conservation**	2 - L, 2 – S	3	03 Hours

Course Objective:

This course provides an introduction to the environment and sustainable development. Understanding of the principles of design for sustainable development.Understanding of the social, cultural, global, and environmental responsibilities of professionals. concepts, theories, and research in the psychology of learning and teaching. This course will help the students to set goals and plan each goal specifically for the class.

Course Outcomes:

At the end of the course, the students will able to –

- Ability to identify the sustainability of the built environment.
- Ability to identify the best practice in sustainable development.
- Ability to evaluate and form a proposal of an existing urban development based on the concept of sustainable development.

Detailed Syllabus:

UNIT- I (Fundamentals of Built Environment)

- Built Environment definition and context
- Urban and Rural context of Built Environment
- Regenerative Development
- Review of Urban forms, Patterns, and spaces in different periods of history viz ancient river valley civilization, Greek, Roman, Medieval, Renaissance, Baroque, in India, and their influencing factors.
- Elements of urban Environment –urban form, townscape, urban spaces, streetscapes, and building forms.

UNIT-II (Application of Software)

- Application of Software of Arc GIS and other software for spatial planning and study.

UNIT- III (Concept and need for conservation)

- Concept and need for conservation.
- Conserving land, water, flora, and fauna in Indian traditional system and architecture, Understanding the traditional technologies and method of conservation in Indian Context and their implication

UNIT-IV (Fundamental of planning and design)

- Fundamental of planning and design of resources conserving architecture.
- Innovative and appropriate design concepts, architecture and construction technologies with case studies of Indian and foreign context

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

Evaluation Criteria for Exam / Question Paper Setting:

A total of eight questions are to be set two from each unit & students are required to attempt a total of four questions i.e. one from each unit.

Course Code	Course Name	L, Sem/Tut, P/FW, Stu	Credits	Duration of Exam
UC/MARCH/ 111-20	MOOC- MOOC - I		3	Certificate from concerned/ imparting agency

The list of Approved MOOC courses is attached for reference.

2nd Semester

IK Gujral Punjab Technical University
Masters of Architecture AER

IK Gujral Punjab Technical University

Masters of Architecture AER (M. Arch. AER 2nd Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MARCH-201/20	Studio II	L-2, S-4	6	Viva Only

Course Objective:

- To create an understanding of the diversities of Architecture Education in National and International context.
- To understand the Management of Architecture Education and related government policies
- To develop skills in the use of fundamental teaching procedures, techniques, and methods of teaching.

Course Outcomes:

At the end of the course, the students will able to :

- Differentiate between various models of architecture education prevalent world over.
- Thoroughly understand the broad curriculum of major Indian schools of Architecture institutes of national repute and also understand the different philosophies applied based on world models.
- Understand Pedagogy and establish its relation with Architecture.

Instruction to the faculty

- Stress must be laid on individual/ collective research & its presentation in the form seminar in the class & finally getting it published.

Detailed Syllabus:

UNIT-I

Various models of architecture education prevalent world over.

Creative Teaching: An exercise to expose the students to understand the basic teaching methodologies suitable for Architecture, schools (formal or informal) at the National and International levels for enhancing creativity. The literature available needs to be reviewed and presented in the class.

Analysis of the curriculum of any major school of thought in architecture education at national as well as international levels needs to be undertaken and understood.

UNIT- II

Pedagogical analysis of a unit from B. Arch syllabus to make the teaching-learning process efficient and effective - meaning & definition, phases of pedagogical analysis, importance/significance in Architecture Pedagogy, merits/demerits, practical on pedagogy.

Programming the teaching schedule - meaning & definition, need & importance, preparing teaching schedule process, merits/demerits, practical planning of teaching lessons for

- Professional Core Subjects
- Building Science and Applied Engineering subjects
- Elective subjects

Planning and assessment methods

Assessment and Evaluation Technique.

Evaluation Criteria for Examination/ Question Paper Setting:

Finally, assignments are to be presented in the form of a seminar in the following stages:

Selection of topic and it is Understanding (introduction and submission of Synopsis) Preliminary Seminar, Final Seminar, Report Submission. Only Seminar Presentations, and written reports to be evaluated for internal/external assessment.

Students would be required to choose topics from each Unit in consultation with the subject in In charge& thoroughly research it before presenting it in the class as a seminar & try to publish it thereafter.

A book review on the topic of architecture education and related issues should be undertaken as part of an internal assessment.

IK Gujral Punjab Technical University

Masters of Architecture AER (M. Arch. AER 2nd Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MARCH-202/20	Dissertation- I	L-2, S-2	4	VIVA-VOCE/ EXTERNAL JURY

Course Objective:

The dissertation is intended to develop the habit of exploring any subject. Topic in detail, make relevant inquires & interpret the outcome in the form of the report.

This course requires students to apply critical and analytical skills to produce a substantial piece of a research report. It provides an opportunity for students to engage in an area of architectural inquiry, including history and theory, technology and environmental science, professional practice, and related topics: developed and presented as coherent, eloquent, and will-illustrated documents.

Course Outcome:

Able to formulate any research project & present it in the standard format.

The student internal work shall be evaluated under different headings as detailed below:-

1. Preliminary Report — 20% of Internal Marks
2. Draft Report — 30% of Internal Marks
3. Final Report + Published Paper — 50% of Marks (40% + 10%)

Instruction to the faculty

Orientation and Research, along with discussions with the supervisor and site visits as required

Evaluation Criteria for Exam / Question Paper Setting:-

Students coming up with the publication of the papers during the course shall be considered for additional weighted out of the 10% marks result as a part of the final report.

The student work shall be evaluated through a system work done by the student along the presentation made at the end of the semester by an external evolution jury. The detailed system of the dissertation shall be workout separately.

IK Gujral Punjab Technical University

Masters of Architecture AER (M. Arch. AER 2nd Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MARCH-203/20	**Psychology of Learning and Teaching**	**2 -L, 2 - S**	**3**	**03 Hours**

Course Objective:

This course provides an introduction to concepts, theories, and research in the psychology of learning and teaching. This course will help the students to set goals and plan each goal specifically for the class.

Course Outcomes:

At the end of the course, the students will able to –

- To equip the students with the psychological theories and techniques of learning, motivation, and creativity, hence adding to teaching skills.
- Apply learning theories and models to classroom situations.
- Compare and contrast the various factors that cognitive, behavioural, and humanistic theorists believe influence the learning process

Detailed Syllabus:

UNIT- I (Teaching Models)

- Fundamental Teaching Model: Theory of teaching; Psychological teaching models; Historical teaching models
- Instructional Objectives: instructional and behavioural objectives; Task analysis
- Entering Behaviour: definition of entering behaviour; Classes of entering behaviour; instructional use of entering behaviour

UNIT-II (Learning)

- Varieties Of Learning And Conditions Of Learning: Gagne varieties of learning: verbal information; intellectual skills- discrimination, concepts principles and problem-solving; Conditions of learning.
- Meaning and Definition, Domains of Learning: Cognitive, Affective and Psychomotor
- Learning Process and Its Aspects, Factors Affecting Learning
- Learning Theories and Their Educational Implications: Behaviourist, Cognitivist and Humanist

UNIT- III (Motivation)

- Motivation: A definition of motivation: the concept of motivation; types of motivation - intrinsic and extrinsic.
- Theories of motivation; Maslow needs hierarchy; Herzberg two factor theory; McClelland three need theory; vroom's expectancy theory; Adam equity theory.
- Techniques of motivating students

UNIT-IV (Creativity)

- Meaning nature and concept of creativity, Constitutes of creativity, Characteristics of creativity, Originality, Flexibility, Creativity & Intelligence.
- Theories of creativity, traditional and modern views of creativity, Creativity techniques
- Assessment of creativity, Encouraging and promoting creativity- Nickerson creativity technique, Creativity, and architecture: trends and scope.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

Evaluation Criteria for Exam / Question Paper Setting:

A total of eight questions are to be set two from each unit & students are required to attempt a total of four questions i.e. one from each unit.

IK Gujral Punjab Technical University

Masters of Architecture AER (M. Arch. AER 2nd Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MARCH-204/20	Architecture Research Methodology - II	2 - L, 2 - S	3	03 Hours

Course Objective:

To introduce the students to the importance of critical inquiry as a way of gaining knowledge and adding to it through research. To expose the students to the various forms of research and research methodologies/ processes. To engage this understanding in the specific field of architectural research.

Course Outcomes:

At the end of the course, the students will able to –

- The student will develop the skill to identify, translate, and interpret issues relating to an architecture based on research inquiry methods.
- The student will gain knowledge of different methods of conducting research and research writing.
- An ability to craft a thesis statement and produce an appropriate program of inquiry.
- An ability to evaluate and apply information.

Detailed Syllabus:

UNIT- I (Introduction)

- Basic research issues and concepts
- Orientation to research process Types of research
- Historical, qualitative, correlational, experimental, simulation and modeling, Logical and argumentation, case study and mixed methods
- Illustration using research samples

UNIT- II (Research Process)

- Elements of the Research process:
- Finding a topic- writing an introduction
- Stating a purpose of study identifying key research questions and hypotheses
- Reviewing the literature, using theory defining, delimiting and stating the significance of the study,
- Advanced methods and procedures for data collection and analysis
- Illustration using research samples

UNIT-III (Researching & Data Collection)

- Library and Archives
- Internet: New information and the role of the internet
- Finding and evaluating sources
- Methods of data collection - From primary sources

- Observation and recording, interviews, structured and unstructured, questionnaires, open-ended and closed-ended questions, and the advantages, sampling, Survey.
- Problems encountered in collecting data from secondary sources.

UNIT-IV (Report Writing)

- Research writing in general
- Components: referencing
- writing the bibliography
- Developing the outline
- presentation.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

Evaluation Criteria for Exam / Question Paper Setting:

A total of eight questions are to be set two from each unit & students are required to attempt a total of four questions i.e. one from each unit.

IK Gujral Punjab Technical University

Masters of Architecture AER (M. Arch. AER 2nd Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MARCH-206-10/20	**Elective I (Architecture Appreciation)**	**L-2, S-2**	**3**	**03 Hours**

Course Objective:

Is to make the students appreciate Architecture as an Art and Science of building beautiful and everlasting pieces of human habitation.

Course Outcomes:

After the completion, of course, the students will be able to:

- Explore and understand the traditional architecture in the Indian context regarding the six major climatic zones prevalent in the country and appreciate the centuries-old wisdom of creating a Human Responsive Built Environment.
- Generate and utilize the information for use in design decisions.

Detailed Syllabus:

UNIT-I

- To understand and appreciate the basic philosophy and Influence of socio-cultural factors in the architecture of the Traditional Indian buildings which influenced the architecture of their respective regions for a significant period.
- Context of building and organization of space, about the function and climatic factors in various zones in India.
- To study and comprehend traditional Indian Architecture created in response to Geological and Geographical need in the past and their impact on the local Architecture.

UNIT- II

- To understand and appreciate the **various building materials** in the traditional Indian architecture in context to the function and climatic needs and its influence on the human psyche. Stress should be laid on understanding the features of the building that survived through the test of time.
- To understand and comprehend the various **construction technologies** used for the traditional Indian buildings, about the change in function and scale of the building.

UNIT-III

- To study, understand, and appreciate the basic philosophy in architectural designing of **historical buildings in the world** which has influenced the architecture of their

respective regions for a significant period. The context of building and organization of space, about the function and climatic factors should be analysed.

- To study and comprehend **traditional world Architecture** created in response to Geological and Geographical needs in the past.

UNIT-IV

- To study, understand, and appreciate the **contemporary buildings** which have influenced the architecture of their respective area. The context of building and organization of space, about the function and climatic factors should also be analysed.

Methodology:

All exercises, as far as possible should be conducted through case studies.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

Evaluation Criteria for Exam / Question Paper Setting:

A total of eight questions are to be set two from each unit & students are required to attempt a total of four questions i.e. one from each unit.

IK Gujral Punjab Technical University

Masters of Architecture AER (M. Arch. AER 2nd Semester)

Course Code	Course Name	L, Sem/Tut, P/FW, Stu	Credits	Duration of Exam
UC/MARCH-211-20 /20	MOOC-II		3	Certificate from concerned/ imparting agency

The list of Approved MOOC courses is attached for reference.

IK Gujral Punjab Technical University

Masters of Architecture AER (M. Arch. AER 2nd Semester)

Course Code	Course Name	Credits	Int: Ext	Duration of Exam
	*** Educational Tour I/Summer Training-I / Vacation Assignment-I**			**Int. Viva Voce**

The education tour to one day to one or two-week duration be encouraged to be undertaken by the students under faculty supervision. During or after the semester the term report shall be submitted to the class coordinator for assessment.

The students are encouraged to undertake summer training in a design/construction office. alternatively, students should also be encouraged to do an online course of similar duration during the summer vacation.

Vacation assignments are being assigned by the HoD in consultation with the class coordinator before the commencement of the vacation and submitted in the following semester to the class coordinator for assessment.

3rd Semester

IK Gujral Punjab Technical University
Masters of Architecture AER

IK Gujral Punjab Technical University

Masters of Architecture AER (M. Arch. AER 3rd Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MARCH-301/20	Studio - III	L-2, S-4	6	VIVA-VOCE/ EXTERNAL JURY

Course Objective: The syllabus has been designed to attain the following objectives:

- To thoroughly understand the knowledge level of students at entry as well as culmination level of B. Architecture and the conduct of various aptitude test & their relevance.
- To study the Higher Education Scenario with a special focus on Technical / Arch Education in view of the Nation educational policies Government of India issued from time to time.
- To understand the skill sets required for the successful practice of the architecture

Course Outcomes: At the end of the course, the students will able to :

- They will have a fairly good idea of the scenario of architecture education in the country.
- To create an understanding of Architecture Curriculum prescribed as [per CoA regulations and compare them in detail for various types of architecture institute.
- Understand the basic issues and challenges Higher Education Scenario with special focus on Technical / Arch Education because of the Education Policy of Government of India.

Instruction to the faculty

Stress must be laid on individual/ collective research & its presentation in the form seminar in the class & finally getting it published.

Detailed Syllabus:-

UNIT-I

To carry out a detailed study to understand the student's knowledge at the entry-level in architecture subjects offered by Various boards of secondary education at Union/ State level must be studied for this purpose in light of eligibility criteria as laid down by the CoA.

Study the process & validity of various Architecture Aptitude Tests in India (the study must focus on the outcome & suitability of such tests).

To understand Architecture Education as part of the broader education system in the country and also to view it concerning the Global scenario.

Role & Responsibility of Statutory Bodies related to education such as

- Ministry of Human Resource Development.
- University Grant Commission (UGC)
- All council of Technical Education (AICTE).
- Council of Architecture (CoA) etc.
- Global bodies regulating Arch Education/Profession.

UNIT- II

Study of various Govt. initiatives in the context of National Skill Development & Make in India flagship programs & how Architecture Institutions can contribute in this direction.

The study of entrepreneurship by the architecture graduates must also be looked upon along with the diversity they opt for. success stories are discussed.

To make students understand the fast-paced dynamics of the architecture profession, which needs to be incorporated in Architectural Education.

To identify the skill sets of students at the culmination of the course. Research must be carried out to identify the crucial skill for successful practice.

Evaluation Criteria for Examination/ Question Paper Setting:

Assignments carried out during the semester to be presented in the form of Research Report / Seminar using various aids which will be evaluated for internal evaluation.

External / Final Evaluation will be done through jury viva voce of the work done during the semester.

IK Gujral Punjab Technical University

Masters of Architecture AER (M. Arch. AER 3rd Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MARCH-302/20	Architecture Appreciation	L-2, T-2	4	03 Hours

Course Objective: is to make the students appreciate Architecture as an Art and Science of building beautiful and everlasting pieces of human habitation.

Course Outcomes: After the completion of course, the students will be able to:

1. Explore and understand the traditional architecture in Indian context with reference to the six major climatic zones prevalent in the country and appreciate the centuries old wisdom of creating Human Responsive Built Environment.
2. Generate and utilize information for use in design decisions.

Detailed Syllabus:-

UNIT-I

- To understand and appreciate the basic philosophy and Influence of socio-cultural factors in architecture of the Traditional Indian buildings which influenced the architecture of their respective regions for a significant span of time.

- Context of building and organisation of space, with reference to the function and climatic factors in various zones in India.

- To study and comprehend traditional Indian Architecture created in response to Geological and Geographical need in the past and their impact on the local Architecture.

UNIT- II

- To understand and appreciate the **various building materials** in the traditional Indian architecture in context to the function and climatic needs and its influence on the human psyche. Stress should be laid on understanding the features of the building that survived through the test of time.

- To understand and comprehend the various **construction technologies** used for the traditional Indian buildings, with reference to the change in function and scale of the building.

UNIT-III

- To study, understand and appreciate the basic philosophy in architectural designing of **historical buildings of the world** which have influenced the architecture of their respective regions for a significant span of time. Context of building and organisation of space, with reference to the function and climatic factors should be analysed.

- To study and comprehend **traditional world Architecture** created in response to Geological and Geographical need in the past.

UNIT- IV

- To study, understand and appreciate the **contemporary buildings** which have influenced the architecture of their respective area. Context of building and organisation of space, with reference to the function and climatic factors should also be analysed.

Methodology: All exercises, as far as possible should be conducted through case studies.

Evaluation Criteria for Exam Question Paper Setting:-

Total eight questions are to be set two from each unit & students are required to attempt total four questions i.e. one from each unit.

IK Gujral Punjab Technical University

Masters of Architecture AER (M. Arch. AER 3rd Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MARCH-303/20	Instructional methods	2 – L, 2 - T	3	03 Hours

Course Objective

The course aims to familiarize the students with the fundamentals of curriculum design. The main objective is to make them understand various instruction methods to be used to develop desired competency and proficiency levels.

Course Outcomes: At the end of the course, the students will able to

- Incorporate innovative instructional technologies through project-based activities.
- Develops methods/strategies that encourage self-directed thinking and learning in nurturing and supportive learning environments.
- Deliver oral presentation through collaborative, online learning software applications.
- To make the students learn the techniques and skill of conducting teaching in the formal classroom

Detailed Syllabus:-

UNIT- I

- The paradigm shift in curriculum. Model of curriculum Management.
- Learning Process. Shift from Traditional Teaching to Producing competency bases learning.
- Learning Environment Classroom Management.
- Teacher as a manager of the learning process. Designing strategies to minimize role conflict.
- Use of Technology in teaching.

UNIT- II

- Teaching Strategies for Direct Instruction-Events of Instruction.
- Methods of Teaching: Lecture Methods and Question-Answer Sessions. Guidelines for conducting Question Answer sessions.
- Team Teaching.
- Demonstration Method: Guidelines to use Demonstration Method for producing learning.

UNIT-III

- Panel Discussion.
- Learning in Group Buzz Group. In Basket. Organizing in basket exercises.
- Case study: Guidelines for writing a case study.
- Seminar and Symposium.
- Self Directed Learning: Teacher Mediation. Reciprocal Teaching. Social Dialogue vs Class Discussion.

UNIT-IV

- Learning produced through Role Play: Role of a teacher in Organising and conducting a simulation.
- Designing and Conducting Games.
- Forced filed Analysis.
- Tutorial Method. Assignment Method: Guidelines for designing Assignments.
- Assessing Learners. Preparing Tests and Item Writing. Marks and Grading Systems.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

Evaluation Criteria for Exam / Question Paper Setting:-

A total of eight questions are to be set two from each unit & students are required to attempt a total of four questions i.e. one from each unit.

IK Gujral Punjab Technical University

Masters of Architecture AER (M. Arch. AER 3rd Semester)

Course Code	Course Name	Credits	Int : Ext	Duration of Exam
UC/MARCH-304/20	* Educational Tour I/Summer Training-I / Vacation Assignment-I	1	100	Int. Viva Voce

The education tour to one day to one or two-week duration be encouraged to be undertaken by the students under faculty supervision. During or after the semester the term report shall be submitted to the class coordinator for assessment.

The students are encouraged to undertake summer training in a design/construction office. alternatively, students should also be encouraged to do an online course of similar duration during the summer vacation.

Vacation assignments are being assigned by the HoD in consultation with the class coordinator before the commencement of the vacation and submitted in the following semester to the class coordinator for assessment.

IK Gujral Punjab Technical University

Masters of Architecture AER (M. Arch. AER 3rd Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MARCH-305-10 /20	Professional Elective- I Guidance and Counselling	2 – L, 2- T	3	03 Hours

Course Objective

- Explain the concept of guidance and counselling.
- Explain various guidance services.
- Explain approaches of counselling and their relevance.
- Explain the techniques and skills of counselling.

Course Outcomes: At the end of the course, the students will able to –

- Develop the skill of administration and interpretation of psychological tests.

Detailed Syllabus:-

UNIT- I

- Concept, Purpose, Assumptions, Need, and Principles of Guidance and Counselling.
- Individual and group counselling and guidance.
- Approaches to counselling: Directive, Non-directive, and eclectic counselling.
- Counsellor – Characteristics, Functions, and Ethics.
- Skills of Counselling – Building trust, Listening, Observation, and Empathy.
- Various theories of Counselling

UNIT- II

- Educational guidance with special emphasis on underachievers and drop-outs, Learning Disabilities.
- Vocational guidance, Occupational information, Placement and follow up Services, aptitude, and personality testing.
- Personal Guidance.
- Importance of non-testing techniques for student appraisal.
- Interview, Observation, Case Study, Anecdotal record, and cumulative record as techniques of student appraisal.

UNIT-III

- Organization of guidance services at various levels of education.
- Problems of organizing guidance services in India.
- Evaluating the guidance program.
- Recent trends of Guidance and Counselling in India.

UNIT-IV

- Characteristics of a good test. Importance of Psychological testing, standardization of test.
- Intelligence, Personality, Aptitude, and interest tests for student appraisal.
- Administration and Interpretation of Psychological tests: Intelligence tests – Verbal, Non-verbal and performance, Personality, Interest Inventory, and Attitude/Value scale
- Administration and interpretation of the Teaching Aptitude Test.
- Practical work and case studies will be done in Practical Training during the fourth semester.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

Evaluation Criteria for Exam / Question Paper Setting:-

A total of eight questions are to be set two from each unit & students are required to attempt a total of four questions i.e. one from each unit.

IK Gujral Punjab Technical University

Masters of Architecture AER (M. Arch. AER 3rd Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MARCH-311-15 /20	Open Elective- I Life Skill /Soft Skill	2 - L, 2 - S	3	03 Hours

Course Objective

To enable students to cope with the challenges of today's world and live a life that is socially and emotionally enriching.

Course Outcomes: At the end of the course, the students will able to Develop an awareness of the self and apply well-defined techniques to cope with emotions and stress. Use appropriate thinking and problem-solving techniques to solve new problems

Detailed Syllabus:-

UNIT- I

Decision Making

UNIT- II

Critical thinking

UNIT- III

Communication and Interpersonal skills

UNIT-IV

Self-awareness and empathy, Coping with emotions and stress

Evaluation Criteria for Exam / Question Paper Setting:-

A total of eight questions are to be set two from each unit & students are required to attempt a total of four questions i.e. one from each unit.

Core References: The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University

Masters of Architecture AER (M. Arch. AER 3rd Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MARCH-308/19	Open Elective- I **GREEN BUILDINGS**	**2 - L, 2 - S**	**3**	**03 Hours**

Course Objective

To make students appreciate and learn the role and importance of Green Buildings in promoting sustainability and components involved in their planning and designing

Course Outcomes: At the end of the course, the students will able to Identify major challenges facing the planet earth and human society. Perform detail performance evaluation of a building based on green rating standards

Detailed Syllabus:-

UNIT- I

- Green Buildings – Introduction, definition, objective, scope, role, and importance
- Climatic Zones in India – Typologies, characteristics, climatic conditions, approach to climatic responsive buildings for each zone with examples
- Green Building's Design – Approach, components, design parameters, orientation, integrated approach to building design

UNIT- II

* Energy Efficient Buildings, Zero Energy and Energy positive buildings

* Town Planning Practices, Green Building, and Sustainability

* Rating and Coding Systems – IGBC, GRIHA, LEED, ECBC (Energy Conservation Building Code)

* Study of Selected Examples of Sustainable Architecture – Vernacular, Historical and Contemporary

* Understating the role and importance of the soft skills Eco-Tech, Design Builders software's

UNIT- III

- Site and Site Planning – Importance, principles, and approaches to designing green buildings
- Building Envelop – Role, function, principles, evaluation, efficiency
- Day Lighting – Role, Importance, principles for design, and lighting design.
- Energy efficiency – Need importance, typologies, active and passive systems for promoting energy efficiency
- Water management - Role, importance and approach to minimize consumption

UNIT-IV

- Green Building and wellness – Indoor Air Quality
- Landscaping – Role, importance, and approach for landscaping
- Building Materials and Green Buildings
- Life Cycle Assessment
- Future of Green Buildings, Global Trends, Government policies, and programs

Evaluation Criteria for Exam / Question Paper Setting:-

A total of eight questions are to be set two from each unit & students are required to attempt a total of four questions i.e. one from each unit.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University

Masters of Architecture AER (M. Arch. AER 3rd Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MARCH-309/19	Open Elective- I Digital Architecture	1 - L, 3 - S	3	03 Hours

Course Objective

The objective of this subject is to expose students to various advanced CAD technologies and analysis and understanding of Various software and its proper utilization.

Course Outcomes: At the end of the course, the students will able to develop an understanding of the various digital software used in Architecture.

Detailed Syllabus:-

UNIT- I

Introduction, History, and Scope of Digital Technologies in Architecture, Digital design media

UNIT- II

CAD Models: Presentation, visualization, drafting, modelling

UNIT- III

CAD vs. BIM

UNIT- IV

Roles of Computing in Architectural Design and Architecture Education.

Evaluation Criteria for Exam / Question Paper Setting:-

The evaluation of students shall be based on the written questions to be set from the course and the practical conducted based on a specific problem given to know the students' understanding of the Computers related to course content.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University

Masters of Architecture AER (M. Arch. AER 3rd Semester)

Course Code	Course Name	L, Sem/Tut, P/FW, Stu	Credits	Duration of Exam
UC/MARCH-321-30 /20	MOOC-II		3	Certificate from concerned/ imparting agency

The list of Approved MOOC courses is attached for reference.

Course Code	Course Name	L, Sem/Tut, P/FW, Stu	Credits	Duration of Exam
UC/MARCH-331-40 /20	MOOC-IV		3	Certificate from concerned/ imparting agency

The list of Approved MOOC courses is attached for reference.

4th Semester

IK Gujral Punjab Technical University
Masters of Architecture AER

IK Gujral Punjab Technical University

Masters of Architecture AER (M. Arch. AER 4th Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MARCH-401/20	Teaching Practice (Institutional Experience)	4 S, 4 P	8	VIVA-VOCE/ EXTERNAL JURY

Course Objective:

Understand the Architectural Education system in India in general & north region in particular. In an internship, the student is supposed to apply the knowledge and the skill sets acquired during the entire course.

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Course Outcomes: At the end of the course, the students will able to :

The subject aims to culminate all teaching procedures, techniques, and experiences learned and practiced in an array of subjects undertaken during the course.

Instruction to the faculty

The students will engage themselves in full-fledged teaching experience and academic works within or outside the institute with simultaneously working on their thesis dissertation II

Evaluation Criteria for Exam / Question Paper Setting:-

The students will be assessed according to the teaching tool preparations, teaching content, teaching style, innovative methods used, and overall impact as a teacher. The students will have to maintain a logbook to keep track of works done and will be assessed based on every class by their respective supervisors. The feedback may also be looked upon.

IK Gujral Punjab Technical University

Masters of Architecture AER (M. Arch. AER 4th Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MARCH-402/20	Dissertation-II	4 S, 8 P	10	VIVA-VOCE/ EXTERNAL JURY

Course Objective:

This course requires students to apply critical and analytical skills to produce a substantial piece of written research that sits alongside the project. It provides an opportunity for students to engage in an area of architectural inquiry, including history and theory, technology and environmental science, professional practice, and related topics: developed and presented as coherent, eloquent, and will-illustrated documents.

The student internal work shall be evaluated under different hands as detailed below:-

4. Preliminary Report — 20% of Internal Marks
5. Draft Report — 30% of Internal Marks
6. Final Report + Published Paper — 50% of Marks (40% + 10%)

Methodology:

Orientation and Research, along with discussions with the supervisor and site visits as required

Evaluation Criteria for Exam / Question Paper Setting:-

Students coming up with the publication of the papers during the course shall be considered for additional weighted out of the 10% marks result as a part of the final report.

The student work shall be evaluated through a system work done by the student along the presentation made at the end of the semester by an external evolution jury. The detailed system of the dissertation shall be workout separately.

Master in Planning (Urban and Regional Planning)

Teaching Scheme & Syllabus for I[st] Semester

Master of Planning (Urban & Regional Planning), abbreviated as M.Plan (URP), is a masters degree course in planning offered by School of Built Environment, IKGPTU Mohali Campus-II. It offers specialisation in Urban & Regional Planning.

The key objective of the course is to equip the students with adequate skills required to comprehend urban and regional issues and to analyse physical, socio-economic, cultural, political and ecological dimensions of the human settlements. The course is designed to provide necessary exposure to various planning processes, emerging trends and other related advanced technical knowhow. It intends to contribute towards the creation of professionals in the field and hence to cater to the specific needs of the industry and academics. During the course, the students will be provided with ample opportunities to interact with the subject experts, relevant organisations, etc. The course enables the students to gain real time experience through their involvement in the ongoing or live projects.

M.Plan (URP) is a two-year course consisting of four semesters. The course structure and syllabus is designed in coherence with the *Model Curriculum for M.Plan /M.Tech (Planning), All India Council for Technical Education, 2011*. The course structure is a combination of various subjects, which includes studios, labs, theory and tutorials. The broad course structure is as follows:

The **first semester** is an integrated semester common to all master courses of planning offered by the school. It introduces the fundamentals of various aspects of planning, such as planning techniques and theory, housing, environment, infrastructure, transportation, socio-economic perspectives and information systems for planning. The studio focuses on the area appreciation and mapping techniques.

The **second semester** focuses on urban planning and consists of the related subjects, such as city and metropolitan planning, land economics, urban governance and geo-informatics. It offers electives, out of which students are expected to select one.

The **third semester** focuses on regional planning. Subjects offered in this semester are thesis programming and research methodology, planning legislation and professional practice, planning or regions, project planning and management, and planning and politics. Besides, one elective is offered.

In the **fourth semester**, students would be required to undertake thesis. In addition, two theory subjects are offered. These include development finance, disaster preparedness and management and general competency.

Each course is divided into four sections consisting of the subject details, objective, units and suggested readings. The subject syllabus is broken into progressive sections through the units, to be taught over the semester. However, it may be noted that the syllabus covered is not exhaustive and the individual subject teacher may augment the syllabus as per his/her perception of the subject. In such cases, prior concurrence of the Head of the Department is necessary. However, the focus of teaching will revolve around by looking critically and objectively at the 'Best Practices' being used at the local and Global level

The syllabus is designed so as to develop strong communication, interpersonal, advocacy and analytical skills of the student. The subject faculty are encouraged to assess the students in a progressive manner throughout the semester through seminars, debates, group/individual presentations, term papers, written exams (open or closed book), take home exams, report submissions, viva voce etc.

I K Gujral Punjab Technical University
Master in Planning
Teaching Scheme & Syllabus for Ist Semester

S. No.	Code	Course Titles	Distribution of Periods per week					Marks	Credits
			L	T	S	P	Total	Int : Ext	
1	UC-MURP101	Planning Studio - I	1	-	7	-	8	60:40	8
2	UC-MURP102	Geoinformatics Systems - I	1	-	-	2	3	60:40	2
3	UC-MURP103	History of Human Settlements	2	1	0		3	40:60	3
4	UC-MURP104	Planning Techniques and Quantitative Methods	2	1	0		3	40:60	3
5	UC-MURP105	Environment Planning	2	1	0		3	40:60	3
6	UC-MURP106	Infrastructure Planning -I	2	1	0		3	40:60	3
7	UC-MURP107	Socio-Economic Planning	2	1	0		3	40:60	3
		TOTAL	**12**	**5**	**7**	**2**	**26**		**25**

Second Semester

S. No.	Code	Course Title	Distribution of Periods per week					Marks	Credits
			L	T	S	P	Total	Int : Ext	
1	UC-MURP201	Planning Studio - II	1	-	7	-	8	60:40	8
2	UC-MURP202	Geoinformatics Systems - II	1	-	-	2	3	60:40	2
3	UC-MURP203	City and Metropolitan Planning	2	1	-	-	3	40:60	3
4	UC-MURP204	Land Economics	2	1	-	-	3	40:60	3
5	UC-MURP205	Infrastructure Planning -II	2	1	-	-	3	40:60	3
6	UC-MURP206	Urban and Regional Governance	2	1	-	-	3	40:60	3
7		**Elective - I**	2	1	-	-	3	40:60	3
		TOTAL	**12**	**5**	**7**	**2**	**26**		**25**

S. No.	Elective – I (Any One)	
1	UC-MURP211	Demography and Planning
2	UC-MURP212	Urban Renewal
3	UC-MURP213	Planning of New Towns

L = Lecture Periods T = Tutorial Periods S = Studio
P = Practicals/ Lab/Workshop Periods

Note: Compulsory summer professional training / internship (four weeks) after second semester

Third Semester

S. No.	Code	Course Title	Distribution of Periods per week				Marks	Credits
			L	T	S	Total	Int : Ext	
1	UC-MURP301	Planning Studio - III	1	0	7	8	60:40	8
2	UC-MURP302	Research Methodology	2	1	0	3	40:60	3
3	UC-MURP303	Planning Legislation	2	1	0	4	40:60	3
4	UC-MURP304	Rural Planning and Development	2	1	0	4	40:60	3
5	UC-MURP305	Project Planning and Management	2	1	0	4	40:60	3
6	UC-MURP306	Regional Planning	2	1	0	4	40:60	3
7		**Electives - II**	2	1	0	3	40:60	3
		TOTAL	**13**	**6**	**7**	**26**		**26**

S. No.	Elective – II (Any One)	
1	UC-MURP311	Settlement Planning in Punjab
2	UC-MURP312	Sustainable Development Goals
3	UC-MURP313	Disaster Management

Fourth Semester

S. No.	Code	Course Title	Distribution of Periods per week				Marks	Credits
			L	T	S	Total	Int : Ext	
1	UC-MURP401	Planning Thesis	2	0	16	18	60:40	18
2	UC-MURP402	Development Finance	2	1	0	3	40:60	3
3	UC-MURP403	Professional Practice	2	1	0	3	40:60	3
		TOTAL	**6**	**2**	**16**	**24**		**24**

L = Lecture Periods T = Tutorial Periods S=Studio
P = Practicals/ Lab/Workshop Periods

Note: Credits for each subject are the same as the number of lecture /tutorial /practical hours per week, whichever is higher.

I K Gujral Punjab Technical University
Master in Planning (1st Semester)

Course Code	Course Name	L/S, T, P	Credits
UC-MURP101	*Planning Studio -I*	1L; 7S	8

Course Objective

- To enable the students to understand the socio-economic and political context along with the land-use dynamics of the study area in relation to the city. The focus of this studio will be to develop the students' skills in area appreciation and mapping techniques.

Literature Review and Area Appreciation at the sub-city level:

Search and review of relevant literatures, Book review, review of articles and paper, etc.

Understanding the linkages between different aspects of socio-economic life in relation to the land-use in the cities. Preparation of area profiles in the city, such as residential, commercial, recreational, industrial, slum area and institutional area. Studying impact of landuse, economic and socio-cultural activities on the physical environment of the area.

Neighbourhood Planning:

Preparation of neighbourhood plan considering different user groups. This may also involve the preparation of residential / site plans preferably for areas where new developments are coming up. Students need to understand the need for a balanced development with incorporation of elements like sustainability, livelihood, environmental protection, inclusive growth and institutional engagement.

I K Gujral Punjab Technical University
Master in Planning (1st Semester)

Course Code	Course Name	L/S, T, P	Credits
UC-MURP102	Geoinformatics Systems - I	1L; 2P	2

Course Objective

- To introduce the information systems and develop basic computing skills relevant to planning

Unit 1: Information System Concepts and Components

Definition of Information Systems; functions of an information system; components, hierarchy, types, flows, loops; introduction to DBMS

Unit II: Information Systems for Planning

Systems approach to planning, use of information systems for planning, CAD, GIS, Remote Sensing, City Engine and other relevant softwares.

Unit III: Data Sources

National Urban Information System (NUIS), National Spatial Data Infrastructure, Natural Resources Data Management System, Bio-diversity information System; Indian Bio resource information Network, Water Resource Information System (WRIS), Environmental Information System; Bhuvan; National Remote Sensing Centre; Indian Space Research Organization; Census of India, National Sample Survey Organisation (NSSO), Directorate of Economics and Statistics, University Consortium for Geographic Information System (UCGIS); standardization of software, Open Geospatial Consortium(OGC) , GIS libraries; GDAL/OGR, Central Statistical Office (CSO), Archaeological Survey of India (ASI), National Family Health Survey (NFHS), Pollution Control Boards, Meteorology.

Unit IV: Information and Communications Technologies

Introduction to computer hardware and software. Communications technologies and Networks; Servers and its types; data storage systems, files and databases; Operating software; applications packages and user written programs; Open source and proprietary GIS software; Web GIS and Location Based Services.

Unit V: Future Information Systems

Cloud computing; Characteristics and Components; 3D visualization; Big Data Management; Online Analytical Processing; Data Warehousing and Data Mining; Data Sharing and Security.

CORE REFERENCES:

- Richard Groot and John Mc Laughlin, Geospatial Data Infrastructure Concepts, Cases and Good practice, Oxford Unviersity Press, Oxford.
- NSDI Metadata standard-NNRMS Secretariat Department of Space, India
- J.K.Berry (1996), Beyond Mapping; concepts, algorithms, and issues in GIS, Wiley Publications
- Laudon, K., & Laudon, J. (2014). Management information systems. (13 ed.,) Saddle River: Prentic Hall publications, New Jersey.

I K Gujral Punjab Technical University
Master in Planning (1st Semester)

Course Code	Course Name	L/S, T, P	Credits
UC-MURP103	*History of Human Settlements*	L-2; T-1	3

Course Objective

- To equip the students with the required knowledge of conventional and contemporary planning thought, pluralistic nature of values in the profession, planning approaches and models. And to focus on integrating procedural and substantive elements of planning theory to current and future planning practices.

Unit I: Classification of Settlements

Informal and Formal, Open and Walled, Feudal and Democratic, Organic and Inorganic, Irregular and Geometrical, Magical and Mystical, Medieval and Classic

Unit II: Planning Concepts

Settlement systems, Classification of settlements, primate city, central place concept, concepts of complementary area, central goods and services, range, threshold etc; city-region relationship; structure of city regions, area of influence, dominance; rural-urban fringes; push and pull factors; migration; need for planning;; Scalar arrangements in Planning (regional, mega, metro regions, city and local Area Plans).

Unit III: Rational Planning Approaches and Models

Systems approach to planning; Comprehensive development plan; Pluralism in planning; Strategic planning; Structure plans; Incremental planning; Equity based planning; Inclusive planning; Feminist planning theory. Participatory planning – Collaborative and communicative planning; local area plans, phasing of plan, integration with five year plans, annual plan, etc. Models - Gravity model; Intervening opportunity models; Political economy model; New economic geography models & globalisation models.

Unit IV: Methods and Tools

Analytical methods - linear programming, threshold analysis, simulation, rank size rule, scalogram, sociogram, cluster and factor analysis, delineation techniques, SWOT analysis; demographic analysis; location models, gravity models.

Unit V: Emerging and Future Trends

Emerging school of thoughts and doctrines; Recent and contemporary contributions to the changing planning paradigms; Planning for future and in future - vision development, strategizing, Implementation of planning policies and development plans.

CORE REFERENCES:

- Baker, M. (2001), Some Reflections on Strategic Planning Processes in Three Urban Regions. Planning Theory and Practice, 2, (2), pp. 230-235.
- Faludi. A (1973), Planning Theory; Pregamon Press, Oxford, England, U.K.
- Friedman, J (2005), The World is flat: A Brief history of 21st century; Farrar, Straus and Giroux publishers.
- Lane, M. B. (2005), Public Participation in Planning: An Intellectual History, Australian Geographer, 36(3), 283-299

I K Gujral Punjab Technical University
Master in Planning (1st Semester)

Course Code	Course Name	L/S, T, P	Credits
UC-MURP104	*Planning Techniques and Quantitative Methods*	L-2; T-1	3

Course Objective

- To acquire proficiency in statistical techniques and able to conduct empirical studies employing statistical software

Unit I: Techniques of Plan Preparation

Surveys, Techniques of conducting surveys for land use, building use, density, structural condition of buildings, heights of building, land utilization and physical features of land; Techniques of mapping – methodologies, physical surveys, land use classification, base map preparation for various levels of plans. Data requirement for various types of plans; Planning standards and regulations – Spatial standards, performance standards and standards for utilities, URDPFI guidelines, development control regulations.

Unit II: Introduction to Statistical Methods

Statistical data - Types of data: nominal, ordinal, interval and ratio; Discrete versus continuous data; Numerical data – properties and measures; Standard notation; Data collection, coding and decoding, methods, tabulation and graphic presentation of data; Frequency distribution; Measures of central tendency- mean, median, mode; Measures of dispersion – range, variance, standard deviation, skewed distribution, kurtosis; Introduction to spread sheets and statistical software.

Unit III: Probability, Sampling distributions and Testing of Hypothesis

Introduction to probability; discrete random variables and probability distribution; Sampling distributions–T and F distribution; Tests of hypothesis; type I & II errors; one-tailed and two tailed tests; chi-square test, Student T test.

Unit IV: Correlation and Regression

Correlation – scatter plot diagrams, correlation coefficients, simple correlation; partial correlation; Least square method; Assumptions of regression analysis; Linear regression, Multiple regressions; Dummy variables; Functional forms; Binary dependent variables; Instrument variables; Time series analysis.

Unit V: Application of vital statistics in Spatial Planning.

Elementary association models and decision making; Index Numbers, Weighted and unweighted index numbers; Application of index number in spatial planning; Demographic projection, calculation techniques of vital events. Methods of demography and population studies – population projections, introduction to Census data and sample surveys.

CORE REFERENCES:

- Alan C. A Cock, A Gentle Introduction to STATA, Revised Third Edition
- Agarwal BL (2007), *Programmed Statistics,* New Age International Publishers, New Delhi
- Wooldridge, Introductory Econometrics: A Modern Approach, Thomson
- Gupta and Gupta: Business Statistics, Sultan Chand and Sons
- Giri and Banerjee: Introduction to Statistics, Academic Publishers

I K Gujral Punjab Technical University
Master in Planning (1st Semester)

Course Code	Course Name	L/S, T, P	Credits
UC-MURP105	*Environmental Planning*	L-2; T-1	3

Course Objective

- To give insights on global and local issues of environmental concern and introduce fundamental concepts and policies related to housing.

Unit I: Components of Nature and Ecology

Meaning and components of nature; Basic concepts of ecology, process of flow of material, water, energy, invasion, succession, perdition, regulatory forces, adaptation, tropic levels, food chains, food web, ecological pyramids; Ecology and their relevance to planning; Modifications in natural environment, causes and consequences.

Unit II: Global & Local Concerns for Environment

Evolution of human settlements; civilizations and impact on environment; Contemporary environmental discourse; Green Agenda and Brown Agenda; Global environmental movement; Environment and poverty; environmental management and environmental planning; global warming, climate change; biological diversity; Brunt land's Commission's Report; Agenda 21; Club of Rome Report – Introduction; UNEP charters – introduction.

Unit III: Environmental resources: Consumption, Conservation and Recycling

Environmental resources and ecosystem services; Concepts of natural reserves; Consumption, Conservation and recycling of resources; India's environmental programmes; Government of India's policies relating to forest, wildlife, hill, water resources, wastelands, hills, coastlines, oceans etc.

Unit IV: Housing and Built Environment

Significance of housing in National Development goals; housing as a basic entitlement; core issues of housing; Understanding of factors affecting residential location, theoretical knowledge of ecological, neo-classical, institutional approach to housing; Existing housing statistics at rural and urban level; estimating housing shortage, housing need, current methods of demand assessment; Typologies of housing; Housing Norms, Densities and Standards; urban sprawl and environmental damages.

Unit V: Housing Sectors, Acts and Policies

Affordable Housing; Housing for the low income groups – slums and squatter settlements; investment in housing in public and private sectors; Cooperative housing, objectives and principles; management and financing of housing projects; Acts, Policies and Programmes; Comparative policy analysis.

CORE REFERENCES:

- Charles Correa (2000). Housing and Urbanisation. Thames and Hudson
- Glenn H. B. (1966). Housing and Society. The Macmillan Company, New York.
- Pachauri, R. K (1999), Looking Back to Think Ahead, TERI, New Delhi.
- Centre for Science & Environment (2006), State of India's Environment – A Citizen Report, CSE, New Delhi.

Prachyath

I K Gujral Punjab Technical University
Master in Planning (1st Semester)

Course Code	Course Name	L/S, T, P	Credits
UC-MURP106	*Infrastructure Planning-I*	L-2; T-1	3

Course Objective

- To provide exposure to infrastructure and its sub-sectors relevant to physical planner in planning and design of urban and regional Infrastructure

Unit I: Introduction to Infrastructure Planning

Importance of infrastructure, Objectives of the utilities, services planning and implications on public health and environment; Economic, Introduction to policies and programmes in infrastructure planning; Issues and concerns of maintaining the utilities and services, need and importance of service level benchmarks of water supply, sanitation, sewerage, solid waste and transportation.

Unit II: Physical Infrastructure

Role of physical planner in planning of utilities and services; water supply distribution system; storm water drainage system; sewerage system; solid waste management, electricity distribution system.

Unit III: Social Infrastructure

Types of social infrastructure;Health care - essential service, availability, access and utilisation, standards, public and private institutions, policies, National Rural Healthcare Mission, hierarchy of health care establishments; Education - primary and secondary educational institutions, standards, policies, right to education (RTE); Public and community spaces – recreational, safety and security.

Unit IV: Transportation

Introduction to transport and travel; Understanding travel from the mobility, economic, social-psychologist, time/space perspective; Transportation planning process; Introduction to four stage modelling; Land use and transportation integration; Demand and supply of transport; Congestion pricing, transit orient development; Transport Pricing, Basic transport economic model.

Unit V: Emerging and Future Infrastructure

Spatial data as infrastructure; Impact of technology on infrastructure; other concepts, components and frameworks.

CORE REFERENCES:

- Dinesh M, Omer T, Michael S, Michael J, University of Michigan, transport research institute, (2009), Road safety in India: challenges and opportunities. (http://tripp.iitd.ernet.in/DM_UMTRI-2009-1[1].o.pdf)
- Jaun de Dios Ortuzar, Luis G.Willumsen, Wiley, (2011), Modelling Transport (4th Edition) – Chapter 4: trip generation modelling, chapter 5: trip distribution modelling, chapter 6: modal split and direct demand modelling, chapter 7: discrete choice modelling, chapter 10: assignment, chapter 16: pricing and revenue.
- Jean-Paul Rorigue, Claue Comtois, Brian Slack, Routledge taylor & francis group, (2006), The geography of transport systems.
- Ministry of Urban Development, Govt. of India, (2010), Service level benchmarks for urban transport (http://urbanindia.nic.in/programme/ut/Service_level.pdf)

I K Gujral Punjab Technical University

Master in Planning (1st Semester)

Course Code	Course Name	L/S, T, P	Credits
UC-MURP107	Socio-Economic Planning	L-2; T-1	3

Course Objective

- To provide exposure to concepts, theory and issues relating to socio-economic aspects towards planning of settlements. Also provide understanding of the society and the economy of the nation and its importance in spatial planning

Unit I: Introduction to Sociology

Definition and scope of sociology; Concepts of sociology-society, social systems, social structure, institution and organization; Concept of space and people (Lefebvre, Soja and Harvey); Sociology and Planning.

Unit II: Social Groups, Social Issues, Rural and Urban Sociology

Contemporary sociological theories- key works of Saskia Sassen, Antonio Gramsci, Loytard, Jane Jacobs; Social structure and social change; stratification and social inequality; Introduction to agrarian, industrial and modern society and spatial formation. Linking social structure and physical structure of village and urban settlements; marginality, vulnerability, social inclusion and exclusion; inequality and equity

Unit III: Applied Economics – Goods and Services

Definition of economics; terms used in economics related to urban and regional planning (URP); central problems of economics; Basics of micro and macroeconomics; use of economics in planning; Definition of need, demand, and supply; Law of demand and supply, types of demand; theory of demand and utility; Elasticity of demand and supply, its use in planning; Typed of economics and their application in URP.

Unit IV: Land Economics

Economic concepts of land, objectives and scope of land economics; Relevance for spatial planning; economic principles of land uses; Economic rent, land use and land values, market mechanism and land use pattern.

Unit V: Economics of Location and Planning.

Analysis of location of specific uses like residential, industrial, commercial and institutional in the light of location theories in intra-regional and inter-regional context; Techniques of cost benefit analysis of urban development programme.

CORE REFERENCES:

- Benjamin S: Occupancy Urbanism: Radicalizing Politics and Economy beyond Policy and Programs, International Journal of Urban and Regional Research, Vol. 32.3, September, 719-729, 2008
- Brenner N and Theodor N: Cities and Geographies of "Actually Existing Neoliberalism", Antipode, Volume 34, Issue 3, 349-379, 2002
- De Souza M: Which Right to Which City? In Defense of Political- Strategic Clarity, Interface, Vol 2(1), May, 315-333, 2010
- Kumar A and Ray R: Decentralized Planning in India-A Myth or a Reality?, Development Alternatives Newsletter, August, 2012

SECOND SEMESTER

S. no	Course Code	Course Title	Load Allocations					Marks %	Credits	Duration of Univ. Exam/ Viva-Voce
			L	Sem/ Tut	P/F W	Stu	Total	Int : Ext		
1	UC/MURP - 201/19	Planning Studio – II (Urban planning)	1	-	-	5	06	60:40	6	06 + External Viva Voce
2	UC/MURP - 202/19	Geo informatics Systems - II	1	-	2	-	03	60:40	2	03
3	UC/MURP - 203/19	City and Metropolitan Planning	2	1	-	-	03	40:60	3	03
4	UC/MURP - 204/19	Infrastructure Planning -II	2	1	-	-	03	40:60	3	03
5	UC/MURP - 205/19	Planning Legislations and Governance	2	1	-	-	03	40:60	3	03
6	UC/MURP – 206-209/19	Elective - I	2	1	-	-	03	40:60	3	03
		Total	10	4	2	5	21		20	

S. No.	Elective – I (Any One)	
1	UC/MURP-206/19	Demography and Planning
2	UC/MURP-207/19	Urban Development Programs
3	UC/MURP-208/19	Planning of New Towns
4	UC/MURP-209/19	Land Economics and Finance

Note: Compulsory summer professional training / internship (four weeks) after second semester (certificate to be submitted)

(Chairperson) (Co-ordinator)

Course Code	Course Name	L -1 , S-5	Int. : Ext.	Exam Duration
UC/MURP - 201/19	Planning Studio -II (Urban Planning)	Credits-6	60:40	06 + External Viva Voce

Course Objective

The studio is designed to expose the students to issues of urban planning and equip them with knowledge and techniques to enable them to analyse urban situations and develop logical decision-making processes.

Course Outcomes: At the end of the course, the students will able to –

1. Analyse urban situations and develop logical decision-making skill.
2. To address the complex overlays of conceptualisation, implementation and finance.

Detailed Syllabus: -

The studio is designed to study one particular urban area and analyse its issues and develop spatial plans with thrust on critical sectors. It focuses on the preparation of integrated development plan for a selected urban area analysing all aspects of physical planning including socio-economic factors and physical infrastructure and also formulation of methods of implementation and projectisation. The course deliverables would be designed based on specific projects undertaken, keeping in mind the overall objective of the course.

Note for faculty: The course should aim to develop intellectual curiosity, scientific temper, creativity and spirit of service to society. It should be undertaken by the students with joy and give them opportunities for individual employment.

Planning of Urban Area

- Identification of an urban area
- Identification and Formulation of Planning Objectives for the project
- Survey of the study area. Data collection through primary and secondary surveys
- Analyses and presentation of data and information
- Review of Planning Objectives post data analysis; Redefining objectives
- Planning for urban area and its region (structure plan / development plan) with emphasis on: Land use, transportation networks and Infrastructure networks.

City level housing and land strategy

- Preparation of Detailed report (case specific)- With clear use of references and approach adopted. Basis of analysis, Broad Chapter classification, briefing outline of each chapter, work details. Delineation of region or Influence area of city may be concluded. Identifications of the Problems and Potentials in: Urban context (Settlements, Networks, Resources Uses, Sitting.)

OR

- City- Aspects as per discussion, Local- As per critical and priority in the approach adopted.
- Application Planning Norms- Existing Planning procedure, Identification of GAPS. Final Submission and review (Drawing, Maps, Report).

Evaluation Criteria for Examination/ Question Paper Setting:

The evaluation is to be done through Viva - voce conducted at the institute level by Internal / External members appointed in consultation with the

Course Code	Course Name	L-1 , P-2	Int. : Ext.	Exam Duration
UC/MURP-202/19	Geo informatics Systems - II	Credits-2	60:40	3 hours

Course Objective

To equip students with advanced concepts of Geo-informatics and computing skills in the GIS software associated scientific tools, and their relevance and applicability in Urban and Regional Planning

Course Outcomes: At the end of the course, the students will able to:

- Apply concepts of geo-informatics and computing skills in the relevant software.
- Understand their relevance and applicability in urban and regional planning.

UNIT I: Introduction to Geo-Informatics

Definitions – Geo informatics, Remote Sensing, Geographic Information Systems (GIS), Spatial Data Infrastructure; the concept of earth surface projections and geoids, Spatial and non-spatial data, raster and vector data, spatial thematic models.

UNIT II: Remote Sensing

Remote Sensing (RS) - Types of RS: passive and active, electromagnetic spectrum; platforms – space, air and ground; digital images – satellite and aerial photography, resolutions, image processing-enhancement, rectification, transformation; image classification and analysis, digital elevation models.

UNIT III: Geographic Information Systems

Components of a GIS; spatial and attribute data- input and output; Data creation and query; Map preparation – Geo-referencing, digitization, layers, layout, spatial data analysis - buffer, overlay, 3D analysis and modeling; Emerging and advanced technology - web-enabled GIS, GPS tracking and monitoring, model builder, transparency through GIS, community participation through GIS, monitoring and management, mobile geo-spatial data collection

UNIT IV: Applications in Urban and Regional Planning

Preparation of base map, land use maps, utility and infrastructure maps, area delineation, cadastral maps, etc.; Area delineation, inventory preparation of classes; Condition assessment of specific areas, Quantitative measurement of landscape surfaces, Vulnerability mapping and Monitoring.

Evaluation Criteria for Examination/ Question Paper Setting:

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

CORE REFERENCES:

1. Anil K.Jamwal, (2008) Remote Sensing and GIS, Jnanada Prakashan
2. Cambell, J.B. (2002) Introduction to Remote Sensing, Taylor & Fancis
3. Jan Van Sickle, (2010) Basic GIS Coordinates, Second Edition, CRC Press; 2 edition
4. Richards, J.A. and Xia, X. (2006) R...

I.K. Gujral Punjab Technical University (M. Plan 2nd semester)

Course Code	Course Name	L-2, T-1	Int. : Ext.	Exam Duration
UC/MURP - 203/19	City and Metropolitan Planning	Credits-3	40:60	3 hours

Course Objective

To introduce students to urban growth systems, linkages between city and region, problems and issues of cities and planning for the metropolitan areas.

Course Outcomes: At the end of the course, the students will able to:

Understand City – Region Linkages and problems of Metro and Mega Cities and role of urban development policies and problems.

Detailed Syllabus:

UNIT - I: (Introduction)

- Definitions and characteristics of urban areas.
- Implications of urbanization in India.
- City in context of the Region.
- Evolution of cities.
- Related concepts.
- Socio-economic character of metropolis.
- Issues and problems in metropolitan planning and development.

UNIT - II: (Metropolitan area)

- New towns, counter magnets and satellite towns
- Metropolitan region and its characteristics.
- Form and structure of metropolis - sheet, galaxy, core, star, ring and multinucleated.
- Centralization and decentralization processes and their impacts.
- Case studies – Delhi, Mumbai, Calcutta, Madras.

UNIT - III: (Development process)

- Metropolitan planning and development process
- 74th Amendment Act, 1992, role of MPC.
- Case studies on metropolitan planning and development – mega cities and metropolitan cities.

UNIT- IV (Urban & Regional Planning Acts)

- Planning legislation – Acts, Policies, Missions and Schemes
- The Punjab Regional and Town Planning and Development Act: objectives, content, procedures for preparation and implementation of regional plans, Master Plans and Town Planning schemes;
- The National Capital Region Planning Board Act; The Punjab District Planning Committees Act; Periphery control, land conversion in the peri-urban areas.

UNIT - V: (Planning and Development Hierarchy)

- Hierarchy of Plans – Regional plan and Master plan, Zonal plan, local area plan and layout plan.
- Management of urban development.

Evaluation Criteria for Exam Question Paper Setting:-

Total ten questions are to be set two from each unit & students are required to attempt total five questions i.e. one from each unit.

Core References:

1. Aggarwal, S.K. (2007). "Urbanization, Urban Development & Metropolitan Cities in India", Concept Publishing Company, New Delhi.
2. Sandhu, Ranvinder, (2006). "Urbanization in India – A Sociological Approach", Sage Publication, New Delhi.
3. Ramachandran, R. (2000). "Urbanization and Urban System in India", Oxford University Press, U.K.
4. Rao, M Partap Rao, (1990). "Planning for Metropolitan Cities – A Suggestive Approach", Concept, Delhi.
5. Johan, W Dickey, (1985). "Metropolitan T...

Course Code	Course Name	L-2, T-1	Int. : Ext.	Exam Duration
UC/MURP - 204/19	Infrastructure Planning -II	Credits -3	40:60	3 hours

Course Objective
To expose students to several dimensions of infrastructure and to give a brief idea on existing policies and programmes.

Course Outcomes: At the end of the course, the students will able to –
Prepare schemes and programmes related to infrastructure development as a component for inclusive development.

Detailed Syllabus:

UNIT- I (Introduction, Basic concepts and theories)

- Role of Physical Planner in Planning of Utilities and Services Networks;
- Objectives of Utilities and Services Planning and Its Implications for Public Health and Environmental Protection;
- Familiarizing to CPHEEO Manual and Guidance.

UNIT- II (Water and Waste Water)

- Urban water cycle, water supply distribution systems, sources of water supply,
- Flood frequencies, flood protection
- Quantity and quality, transmission and distribution
- Treatment methods, treatment plan location, planning and layouts of distribution system,
- Concept of rain water harvesting and its need at community level.
- Concept, characteristics of waste water, Industrial effluents and their effects,
- Waste water treatment methods, planning and location of treatment plants, decentralised waste water treatment.
- Low cost sanitation,
- Storm water drains, zero discharge systems, service level benchmarks (SLB).

UNIT- III (Solid Waste Management)

- Elements of solid waste management,
- Classification and Characteristics of Solid Wastes;
- On Site Collection, Storage, Transportation and Disposal of Solid Wastes; Processing and Treatment of Solid Wastes;
- Land Filling and composting, pre and post treatment, best practices and technologies in waste management,
- Service level benchmarks, MSWM rules 2000, environment policy 2006.
- Solid waste management for Indian cities.

UNIT -IV (Urban Energy Systems)

- Systems and hierarchy,
- Tele-communication networks,
- Macro versus micro grid ,
- Renewable sources of energy in India,
- Energy policy, national missions- solar and enhance energy efficiency.

UNIT -V (Traffic and Transportation and Regional Infrastructure)

- Urban Transport planning process and issues, Public Private Partnerships, Appraisal of CTTS, Master plan, Introduction to regional infrastructure and types , significance to economic development, Regional integrated planning approach, Institutional mechanism,
    - Basis of Regional Network of Roads; Characteristics of National, State and District Highways; By-Pass Design Factors of Highways through Towns
    - Traffic Management- Existing Organizational and Legal Framework; Traffic and Environmental Management Techniques; Review of the Existing Traffic Management Schemes in Case Cities

Evaluation Criteria for Examination/Question Paper Setting:

Total ten questions are to be set two from each unit & students are required to attempt total five questions i.e. one from each unit.

Core References:

1. Birdie, G.S. (2012) . Water Supply and sanitary Engineering, Dhanpatrai Publications
2. Trifunovic, N. (2006). An Introduction to Urban Water Distribution, Taylor & Francis, U.K.
3. Hussain, S.K. (2006). Water supply and sanitary engineering, Oxford Publications, New Delhi
4. CPHEEO, (1997). Manual of Sewage and Sewage Treatment, Ministry of Housing & Urban Development, Government of India.
5. CPHEEO, (1997). Manual of Water Supply in Water Treatment, Ministry of Housing & Urban Development, Government of India.
6. Environmental Engineering, Howard S. Peavy, Tata Mc Grawhill
7. Regulation and the Management of Public Utilities, C. S. Morgan, Gale
8. Urban Planning Manual, AIILGS Reader
9. Solid Waste Management, Krishana Gopi Sanoop P, Sasikumar K, Phi Learning
10. Telecommunication Management Networks (TMN) Implementation, Amani Omer, Lambert Academic Publishers 6.
11. Water Supply Engineering: Environmental Engineering – I, Arun Kumar Jain, Ashok Kumar Jain, B. C. Punmia, Laxmi Publications
12. Kadiyali, L.R. (2014). Traffic Engineering and Transport Planning. Khanna Publishers. New Delhi.

Course Code	Course Name	L-2, T-1	Int. :Ext.	Exam Duration
UC/MURP - 205/19	Planning Legislations and Governance	Credits-3	40:60	3 hours

Course Objective

To expose students to various planning laws, legislations, acts, regulations which have an impact on urban and regional planning and development.

Course Outcomes: At the end of the course, the students will able to –

- To learn plan preparation with respect to planning legislation.
- Understand the working of government at central- state and local level.
- To learn how to advise on governance of cities and their regions.

Detailed Syllabus:-

UNIT- I (Land use Regulations)

- Evolution of planning legislation in India, Seventy Third & Seventy Fourth Constitution Amendment Act.
- Model Town and Country Planning Acts; Objectives, contents and planning implications of important planning Acts including - The Land Acquisition Act: Concepts, procedure for compulsory acquisition of property and determination of compensation;
- The Punjab Municipal Corporation (Amendment) Act; The Punjab Town Improvement Act.

UNIT- II (Environmental legislations)

- Slums in urban area: legal aspects -The Tamil Nadu Slum Areas (Improvement and clearance) Act; Rent Controls in India;
- The Water (Prevention & Control of Pollution) Act; The Air (Prevention & Control of Pollution) Act; The Environment Protection Act;
- Water Bodies Conservation Act; Environment Protection Act;
- Legal aspects of innovative techniques such as Transfer of Development Rights.
- Environment Tribunal Act;

UNIT- III (National and Local Governance)

- Definition, concepts and types government and governance
- Central, -state- local government relations and controls, pre- independence and post-Independence government system in India
- Theories and methods of administration system, 73rd and 74th Constitutional amendments GOI, Municipal acts and structure of local government, municipal election- city mayor and commissioner-based governance system.

UNIT- IV (Governance: Urban and regional)

- Urban government and urban systems- administration set up
- Institutional arrangement of urban local government
- Urban development management and UN habitat initiatives
- Municipal infrastructure development and service delivery system of water , health , sanitation , security and poverty reduction
- Urban disaster preparedness and management
- Panchayati raj , governance at rural levels.

UNIT -V (Municipal Governance, Public participation and e- Governance)

- History, evolution of centralisation versus decentralisation of governments
- Government reforms – lessons from JNNURM, Demography and participating democracy, citizen participation and participatory governance – organisation, types, structure, function, communication and organisational climate
- Information communication system and local government
- Role of people in local government decision making process, Network Governance and Multi- stake holders Governance.
- Meaning and form of e- Governance at national and international experiences in rural and urban areas.

Evaluation Criteria for Exam Question Paper Setting:-

Total ten questions are to be set two from each unit & students are required to attempt total five questions i.e. one from each unit.

Core References:

1. Basu, Durga Das (2013), Introduction to the Constitution of India, Lexis Nexis Butterworths Wadhwa Nagpur, India.
2. GOI, JNNURM, Implementation of 74th Amendment and Integration of City planning and delivery functions, state level reform, ministry of urban development.
3. Mathias Finger and Sultana (Eds) (2012), e-Governance a Global Journey, Global Publications, London.
4. Kulshreshtha, S.K. (2012) *Urban and Regional Planning in India - a handbook for professional practice*. SAGE Publications India Private limited, New Delhi.
5. Campbell, H. and Marshall, R. (1998) *Acting on Principle: Dilemmas in Planning Practice*, Planning Practice and Research, Vol.13, No.2, pp.117-128.
6. Town and Country Planning Act (any State Act)
7. Model Municipal Act, Ministry of Urban Development, Government of India
8. Nagar Raj Act (any State Act)
9. Environment Protection Act (Central Act).

Course Code	Course Name	L-2, T-1	Int. :Ext.	Exam Duration
UC/MURP-206/19 (EL- I)	Demography and Planning	Credits-3	40:60	3 hours

Course Objective

To enhance the understanding of the students on the population dynamics and analyse the demographic demography data and information.

Course Outcomes: At the end of the course, the students will able to:

- Prepare demographic data of the country
- Understand the requirements of the population

Detailed Syllabus:

UNIT - I : (Demography)

- Definition, Scope and limitation- population size, composition and distribution
- Demography and planning – Urban and Rural Demography- social demography

UNIT- II (Demographic Theories)

- Traditional and modern theories of population- Population dynamics
- Population transition- Population and Migration – fertility, mortality and migration.

UNIT- III (Demographic Methods)

- Data Sources & Limitations – Crude and Specific Rates
- Methods of Standardization, Methods of Data Collection
- Principles in Design of questionnaires
- Principles of Sampling, Types of Sampling, Sampling of Population and Area, Sources of Error, Sample Size

UNIT -IV (Demographic Patterns, Policy and Development)

- Population patters in India and the World. Distribution & Structure of Population – Population Change Causes & Implications
- Demographic Characteristics of Population and their Measures
- Population growth and development – Natural growth and migration of population.

UNIT -V (Population Projection & Life Tables)

- Population Projection Methods – Application Contexts - Migration analysis – Description and Construction of Life Tables

Evaluation Criteria for Exam Question Paper Setting:-

Total ten questions are to be set two from each unit & students are required to attempt total five questions i.e. one from each unit.

Core References:

1. Gupta S.C, (2004) 'Fundamentals of Statistics', Himalaya Publishing House, New Delhi,
2. Morris Hamburg, (1977) 'Statistical Analysis for Decision Making', Harcourt Brace Jovanovich, Inc., New York
3. Pollard A. H (et al) (1981)

Course Code	Course Name	L-2, T-1	Int. :Ext.	Exam Duration
UC/MURP-207/19 (EL- I)	Urban Development Programs	Credits-3	40:60	3 hours

Course Objective

To provide basic conceptual understanding of heritage and conservation issues and to provide exposure to the contemporary conservation approaches.

Course Outcomes: At the end of the course, the students will able to

1. Appreciate Indian art and architecture and salient features of its heritage sites.
2. Understand the institutional framework of the country.

Detailed Syllabus:-

UNIT - I: (Conservation)

- Conservation method and approaches, Case studies from world heritage sites and cities;
- Historical Settlements - Salient features, patterns, historical landscape and restoration of natural and artificial surrounding.
- Inclusion and heritage, politics of conservation, participatory heritage planning

UNIT- II (Renewal of Core Area)

- Urban renewal as a part of metropolitan plan ,
- Techniques of identification of Urban Renewal areas, Conservation, Rehabilitation and Redevelopment, Management of Urban Renewal areas,
- Incentive zoning and TDR

UNIT- III (Inclusive Planning)

- Language and discourse in planning, interactive planning, multi-directional flows in decision-making, communicative rationality and democratic processes, building consensus in planning
- Housing and basic needs - lack of essential infrastructure; poor condition of existing services.

UNIT -IV (Informal Area)

- Informal sector – definition and dimensions; migratory impulses and their association with growth of informal sector;
- Role of informal sector in housing.

UNIT -V (Smart City)

- Elements or dimensions of a smart city - smart economy, smart mobility, smart environment, smart people, smart living, and smart governance;
- Smart city capitals;
- Physical capital, human capital social capital and intellectual capital.

Evaluation Criteria for Exam Question Paper Setting: -

Total ten questions are to be set two from each unit & students are required to attempt total five questions i.e. one from each unit.

Core References:

1. Banister Fletcher (1996), A History of Architecture, Routledge
2. Mark M. Jarzombek (2013), Architecture of First Societies: A Global Perspective, John Wiley Publications
3. Robert E. Stipe, ed. (2003), A Richer Heritage: Historic Preservation in the Twenty-First Century, Chapel Hill: University of North Carolina Press.
4. Rodney Harrison (ed) (2009), Understanding the Politics of Heritage, Manchester University Press
5. Lazaroiu, G., & Roscia, M. (2012). Definition methodology for the smart cities model. Energy, 47, 326–332.
6. Smart Cities Council. (2013). Smart City Readiness Guide: planning manual for building tomorrow's cities today. Redmond, VA.

Course Code	Course Name	L-2, T-1	Int. :Ext.	Exam Duration
UC/MURP-208/19 (EL- I)	Planning of New Towns	Credits-3	40:60	3 hours

Course Objective

To make Students aware and exposed to changing scenario in the spatial order of cities and regions as well as the emergence of virtual societies in the World.

Course Outcomes: At the end of the course, the students will able to:

- Understand the use and power of emerging new technologies and social networks among communities.
- Understand the paradigm shift in the spatial planning outlook and governance edge.

Detailed Syllabus:-

UNIT- I (Planning and Technology)

- Traditional settlements to Modernity – Spatial Planning and Technology Interface-
- Socio-economic Planning and Technology Interface
- Planning cities and local technologies
- Technological innovations and responsive city planning
- Planning responsive Technology Vs Technology Responsive Planning.

UNIT- II (Cities-Technology-infrastructure)

- Transportation and technology, water, sanitation and technology, energy efficient technology for home, street, neighbourhoods and city
- Telecommunication, health and education
- Security and safety for buildings and people in cities.

UNIT- III (Techno Cities)

- Digital cities, virtual cities, technology parks
- Smart planning and infill development
- Planning, Design and Communication System
- Socio-economic and environmental Impact of Techno Cities.

UNIT- IV(Governance)

- Role of Law and Technology,
- Administration and Organization,
- Industry and corporate, communities and people in building smart cities and smart communities, participatory planning

UNIT- V (Case Studies)

- Best Practices in India and around the World.

Evaluation Criteria for Exam Question Paper Setting:-

Total ten questions are to be set two from each unit & students are required to attempt total five questions i.e. one from each unit.

Core References:

1. Brkovic, M. B. (2004) Planning in the Information Age: Opportunities and Challenges of E-Planning, CORP,
2. Intelligent Community forum, (2012) "Innovation and Employment in the Intelligent Community", Intelligent Community forum, pp1-35,
3. Komakech, D. (2005) "Achieving more intelligent cities", Municipal Engineer, pp259-264,
4. Nohrstedt, (2002) S.A. "Digital Planning: integrating new information and

Course Code	Course Name	L-2, T-1	Int. :Ext.	Exam Duration
UC/MURP-209/19 (EL- I)	Land Economics and finance	Credits-3	40:60	3 hours

Course Objective: This course specifically aims at enabling students to:

Know the role and use of land, real estate and environment within an economy and to examine problems faced in urban areas.

Course Outcomes: At the end of the course, the students will able to:

- Examine and explain both theoretical and practical applicability of the different theories of urban growth.
- Identify and Examine different problems faced on land and the built environment.
- Explain possible approaches of dealing with different problems identified on land and the built environment

Detailed Syllabus: -

UNIT - I: (Introduction)

- Definitions: economics, micro economics, macroeconomics, goods, wealth, income, money, price, cost, revenue, value, land, capital, labour, enterprise, utility, demand, supply.
- Land as Resource
- Land use

UNIT - II: (Land Value)

- Land value – concept and factors affecting.
- Macro and micro approaches such as trade off model and environmental preference model.
- Real estate – concepts and characteristics, urban real estate market problems.

UNIT - III: (Land as a Fiscal Tool)

- Interests, types of interests – freehold interests, lease hold interests, form of lease.
- Speculation in urban land, betterment and worsenment.
- Urban land policy – objectives and measures of urban land policy.
- Instrument for implementing urban land policy.
- Direct Government action, legal and physical controls.

UNIT- IV : (Overview of Development Finance)

- Concept of development finance, Approaches, Development administration at National, State and Local level and the process of formulation, implementation and management.
- Structure of implementing authorities: Improvement trusts, Development authorities, Metropolitan Development Authorities and their relationship with local governments. Financial institution: concept, typology and their role.

UNIT- V:(Financing Mechanism)

- Financing of urban development, infrastructure and services – mechanisms and instruments, subsidy reduction, cost recovery, public private partnerships:

Evaluation Criteria for Exam Question Paper Setting:-

Total ten questions are to be set two from each unit & students are required to attempt total five questions i.e. one from each unit.

Core References:

1. Arnott, Richard J, and Daniel P. McMillen (Ed.) (2008). "A companion to Urban Economics", Blackwell Publishing, U.K.
2. Mcdonald, John and DanialMcMillen (2006). "Urban Economics and Real Estate: Theory and Policy", Blackwell Publishing, U.K.
3. Alan, E.W. (1985). "Urban Economics – An Introduction", BlackWell Publication, New York.
4. Lean, W (1982). "Aspects of Landuse Planning", Gonthic Publications, New Fersy
5. Raleich, Barlowe (1980). "Land Resource Economics", Prentice Hall Publication, New Jersy.
6. Paul, B. N. (1977). "Urban Land Economics", The McMillan Press, London. Report of the Committee of Urban Land Policy (1965). Ministry of Health, Govt. of India.
7. Richard, Richard Hemming and H.Barry, 2013, The International Handbook of Public Financial Management Centre for aid and public expenditure.
8. Allen .F, Yago. G , 2013,Financing the Future, Market-Based Innovations for Growth, Pearson Publications
9. J.Gupta,2008, Privatisation of Municipal Finance in India, Atlantic publishers and Distributors
10. Stephen Spratt , 2008, Development Finance: Debates, Dogmas and New Directions , Routledge Publications.

IK Gujral Punjab Technical University Kapurthala
M. Planning: Teaching Scheme 2019

3rd SEMESTER

Course Type	S. No	Course Code	Course Title	Load Allocations					Marks %	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem / Tut	P/ FW	Stu	Total	Int : Ext		
PC	1	UC/MURP - 301/19	Planning Studio – III (Regional Planning)	1	-	-	4	05	60:40	5	External Viva Voce
PAECC	2	UC/MURP - 302/19	Regional Planning	2	2	-	-	04	40:60	3	03
		UC/MURP / MOOC 307(-) /19	MOOC-I	-	-	-	-	-	-	-	Certificate from Concerned Agency
	3	UC/MURP - 303/19	Research Methodology	2	2	-	-	04	40:60	3	03
		UC/MURP / MOOC 308(-) /19	MOOC-II	-	-	-	-	-	-	-	Certificate from Concerned Agency
SEC	4	UC/MURP - 304/19	Review of Summer Professional/ Vocational training / internship	-	-	-	-	-	S / US	NC	Internal Viva Voce
PE	5	UC/MURP -PE- 30 (-)/19	Professional Elective-III	2	2	-	-	04	40:60	3	03
		UC/MURP / MOOC 309(-) /19	MOOC-III	-	-	-	-	-	-	-	Certificate from Concerned Agency
OE	6	UC/MURP - OE-306(-)/19	Open Elective-I	2	2	-	-	04	-	3	Certificate from Concerned Agency
		UC/MURP / MOOC 310(-) /19	MOOC-IV	-	-	-	-	-	-	-	Certificate from Concerned Agency
	Total							21		17	

IK Gujral Punjab Technical University Kapurthala
M. Planning: Teaching Scheme 2019

Note: The selection of MOOCs should be related to the subject substituted as far as possible. The prior approval of the HoD/ Institute is mandatory. The PTU guidelines with respect to MOOC issued from time to time should be followed.

UC/MURP - 304/19 this is carried out in the intervening period of 2nd and 3rd semester, the evaluation of report/s to be done in the 3rd semester by an external jury.

S. No	Professional Elective- (Choose any one from the given choices)		Open Elective- (Choose any one from the given choices)		MOOC	
1	UC/MURP - PE-305(A)/19	Special Area Planning	UC/MURP - OE-306(A)/19	Introduction to Philosophical Thoughts	UC/MURP /MOOC 307/19 (related to planning)	MOOC-I
2	UC/MURP - PE-305(B)/19	Disaster Management	UC/MURP - OE-306(B)/19	ICT for Development	UC/MURP /MOOC 308/19 (related to R.M)	MOOC-II
3	UC/MURP - PE-305(C)/19	Project Planning and Management	UC/MURP - OE-306(C)/19	Soft Skills and Interpersonal Communication	UC/MURP /MOOC 309/19 (related to allied planning)	MOOC-III
4	UC/MURP - PE-305(D)/19	Rural Planning and Development	UC/MURP - OE-306(D)/19	Introduction to Art and Aesthetic	UC/MURP /MOOC 310/19 (related to Legal Services/ Administration/ Personal Development /Health & Happiness / Miscellaneous etc	MOOC-IV

Syllabus of

M. Planning
(3rd Semester)

Batch 2019

By

Master in Planning
IK Gujral Punjab Technical University

IK Gujral Punjab Technical University

Master in Planning (M. Plan. 3rd Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MURP-301/19	Planning Studio -III (Regional Planning)	1 L; 4 S	5	Viva voce only

Course Objective:

The thrust of this studio would be on regional planning and would include the preparation of a regional development plan for a selected area.

Course Outcomes:

At the end of the course, the students will able to –

- Prepare projects of regional scale
- To address the complex overlays of context, linkages, legal frameworks and hierarchy.

Detailed Syllabus:

The studio focuses on the regional planning, which deals with different components, scales, contexts of regions such as metro region, resource region, special region and district planning. The exercise enables students to comprehend the issues related to the identified regions, their links with higher and lower order plans. It involves a comprehensive review of relevant literature, policies, frameworks, field studies, documentation, analysis and proposed interventions. These may include the preparation of sustainable regional plans, and formulation of strategies.

Unit- I: Metropolitan / Regional Plan

- Defining characteristics of identified areas; Understanding the theoretical base of the city—Prevailing concept of urban planning and development, contents of the study of a city/town, best practices adopted in India (abroad examples),
- Case study and literature review of planning concepts and norms for the selected area/special area; Review of the previous works done, Outline of the planning laws.

Unit- II: City level housing and land strategy

- Stage of the Comprehensive Plans- Regional, City and Local Area Plans (LAP). Preparation of detailed Map-Regional, City and Local Area (selected pockets for Zonal Plans).
- Outline framework of development – sectoral and spatial
- Implementation framework – capital investment and funding methods
- Financial feasibility
- Governance and management aspects.

Evaluation Criteria for Exam Question Paper Setting:

The evaluation is to be done through Viva - voce conducted at the institute level by Internal / External jury members appointed in consultation with the university from the approved panel list of examiners.

Core References:

The assigned faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library/on web portals/online. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Department Library & Academic department.

IK Gujral Punjab Technical University

Master in Planning (M.Plan. 3rd Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MURP-302/19	Regional Planning	2 L; 2T	3	3 hours

Course Objective:

This course specifically aims at enabling students to understand the theoretical basis for various concepts and analytical tools of Regional Planning and learn the practice of regional planning in the Indian context.

Course Outcomes:

At the end of the course, the students will able to –

- Understand of the issues of regional development, regional disparity and the need for balanced regional development.

Detailed Syllabus:

Unit - I: Introduction

- Concept of Region; Need of regionalization; Techniques of delineating the regions.
- Concept of Regional Planning and its Objectives.
- Settlement System: - Elements, Function, Spacing, Linkage, Settlement Pattern and Factors Responsible.

Unit - II: Regional Growth

- Regional Inequalities and Spatial Patterns: – Growth, Density and Inequalities of Population Distribution.
- Regional Planning Policies and Its Relevance.
- Economic and Regional Growth Processes: - Approaches of Rostow, Hirschman, Myrdal, Friedman, and Haggerstand.

Unit - III: Development Strategies

- Regional Development Strategies: Centralized and Decentralized.
- Regional Planning Process
- Tools and Techniques of Regional Analysis.
- Metropolitan Regions: - Concept of Degree of Primacy, Area of Influence, Service Area, City Regions and Delineation Techniques; Centralization and Decentralization Processes; Concepts of Ring and Satellite Towns, Counter-Magnets; Forms and Concepts for Metropolitan Planning and Development.

Unit - IV: Formulation of regional plan

- Identification of plan objectives
- Regional studies- Physical socio- economic infrastructure, legal- collection, classification and analysis of data.
- Norms and Standards for regional planning
- Formulation and Evaluation of alternative plan.
- Implementation of regional plan, its tools such as legal, administrative and financial.

Stress to be given on Regional development case studies such as Rajasthan canal area, National Capital Region, etc.

Criteria for Evaluation and Exam Question Paper Setting:

Total eight questions are to be set, covering the whole syllabus and two questions are required to be

Core References:

The assigned faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library/on web portals/online. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Department Library & Academic department.

IK Gujral Punjab Technical University

Master in Planning (M. Plan. 3rd Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MURP-303/19	Research Methodology	2 L; 2 P	3	3 hours

Course Objective:

- To sensitise the students with importance, types and techniques of carrying out research in the field.
- To learn and practice the literature survey aspects of projects, prepare the scope and goals for the project and improve the research presentation skills with latest tools.
- To enable the students to identify a topic and then develop a proposal and methodology in detail besides providing them with the required theoretical inputs on the syllabus contents

Course Outcomes:

At the end of the course, the students will able to –

- Apply various research techniques for their research projects and thesis
- Understand and explore various areas of research in urban planning
- Formulate a research a problem

Unit- I: Introduction to Research

Definition and needs of Research, Scientific research and methods, System approach of research, Levels of research: micro and macro; Major steps in the conduct scientific research, induction, deduction and verification; Selection and formulation of research problems, reviewing of literature, Designing a research, Pre-test and Pilot study.

Unit- II: Research Process

Research methodology: Quantitative – surveys, experimental, longitudinal, cross-sectional studies; Qualitative – case studies, action research, participative enquiry, grounded theory etc.

Content development - Developing contextual background; Research design; Identification of research problem; Research questions; Formulation of hypothesis; Writing aims, objectives, scope and limitations; Review of relevant literature; Identification of suitable research methods/ techniques/ instruments; Data collection – questionnaires, sampling techniques, observation, interviews; Analysis - qualitative and quantitative analysis, data synthesis; Research outcome – research findings, summarizing

Unit- III: Writing a Research report and research ethics

Technical writing – content synthesising, paraphrasing, citation and referencing; Academic writing – research proposal / synopsis, abstract writing, report writing and mapping; Meaning of ethics in Research; Responsibility of ethics in research.

Unit- IV: (Concept development)

Issues and areas of urban planning research and data, Examples of research methods in relevant fields- Planning, Infrastructure Planning, Housing and Urban Design.

Concept of model, role of different types of models used in urban planning, Understanding operational models related to landaus transportation, location of activities, land value, accessibility and simulation of urban growth.

Note: Students shall be encouraged to present a Seminar and write a report on any research topic.

Criteria for Evaluation and Exam Question Paper Setting:

Core References:

The assigned faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library/on web portals/online. The Faculty is also advised to keep on updating the reference list and submit the latest

IK Gujral Punjab Technical University

Master in Planning (M.Plan. 3rd Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MURP-304 /19	Review of Summer professional training / internship	4 weeks	Non-Credited	Internal Viva Voce

Course Objective:

To expose the students to the profession of planning and foster links with the industry so as to develop an understanding of professional nature of various organizations involved in the planning profession. The student is required to undertake summer training after 2 semesters of course work in any government, private or research organization undertaking urban and regional planning works. The practical training will commence during the summer break between second and third semester.

Course Contents:

The student is expected to work on any project/s related to urban planning or any specialization such as infrastructure planning, environmental planning, transportation planning, housing etc The students are required to work in the planning office /organization they are assigned to, for a period of 4 weeks.

- The student is expected to work on any project/s related to urban planning or any specialization such as infrastructure planning, environmental planning, transportation planning, housing etc.
- Individual contribution of the student in the project handled, in any of the stages of work undertaken (data analyses, project formulation, policy framing etc.) is expected.
- Each student shall have to undergo professional training for a period of at least 4 weeks in an establishment approved by the class coordinator and professor in charge.
- A student will be required to submit a detailed report on the work carried out by him during the training containing the following aspects:
  1. A brief introduction to the organization.
  2. Objectives and functions of the organization.
  3. Nature and structure of the organization, explanation of various divisions and their role/working in the organization.
  4. Nature of projects, responsibilities and authority (Legal, Jurisdictional etc.) of the organization in the recent past.
  5. Nature of current projects in brief, undertaken by the organization.
  6. Details of the project(s)/activities the student has worked upon.
  7. Student's contribution, comments/observation on various activities/project(s) undertaken by him in the organization.
  8. Nature of responsibility given to the student and the work done by him/her on weekly basis.
- The student is required to bring the following documents on the official letterhead from the organization in which he/she has undergone internship.
  1. Joining Report: A letter issued by the organization duly signed by the internship supervisor/authorized signatory.
  2. A certificate from the head of the organization/division regarding attendance of internship and its successful completion.

Evaluation Criteria for Exam Question Paper Setting:

The students would be evaluated on the basis of the report submitted and presented as a seminar at the time of viva-voce and the report received from the organization. The viva-voce of the report shall be conducted by the Internship Coordinator.

IK Gujral Punjab Technical University

Master in Planning (M. Plan. 3rd Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MURP-PE-305(A)/19 (Elective-II)	*Special Area Planning*	2 L; 2T	3	3 hours

Course Objective:

To introduce the students to various Special Areas with their specific planning needs and priorities and the implication on development in these areas.

Course Outcomes:

At the end of the course, the students will able to –

- Develop development plans of special areas ;Understand the use and power of emerging new technologies and social networks among communities.
- Understand the governance and management aspects of these areas.

Detailed Syllabus:

Unit- I: Introduction

- Need for Special area planning,
- Types of special areas and their defining characteristics.

Unit- II: Evolution of special planning areas

- Evolution of special planning areas under distinct geo-physical structure, location, extreme backwardness etc.
- Planning commission approaches for identification of special areas.

Unit- III: Legislations

- Legislations and norms for Special Area Development in the Indian context.
- Capital investment and funding methods, public private partnerships in development process.
- Governance and Management aspects.

Unit- IV: Planning for Special Areas

- Planning for Special Areas under consideration would include Formal and Functional Regions (Hill Areas, Coastal Areas, Desert Areas, Extremist Affected Area, Special Economic Zones, Port City, Aerotropolis, Medi-City, Knowledge City etc.).
- Case Studies of various typologies of Special Area Development Plans in Indian and international context.

Criteria for Evaluation and Exam Question Paper Setting:

Total eight questions are to be set, covering the whole syllabus and two questions are required to be set from each unit. Students are required to attempt total five questions i.e. one from each unit.

Core References:

The assigned faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library/on web portals/online. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Department Library & Academic department.

IK Gujral Punjab Technical University

Master in Planning (M.Plan. 3rd Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MURP-PE-305(B)/19 (Elective-II)	Disaster Management	2 L; 2T	3	3 hours

Course Objective:

To provide an overview to disasters, critical understanding of the processes and stakeholder roles involved in reducing the impact of disasters on settlements and to understand Planning of Disaster-Prone Areas

Course Outcomes:

At the end of the course, the students will able to –

- Understand the disasters and disaster management.
- Understand planning of disaster prone areas and know various mitigation measures and preparedness

Unit-1: Introduction to Disasters

- Natural and man-made disasters, Concepts, and definitions of Disaster, Hazard, Calamity, risk, vulnerability, resilience and adaptation; factors and significance, causes and effects, global disaster profile. Hazard and Vulnerability profile of India.

Unit-2: Planning for Disaster Prone Areas – I

- Typology of disasters in India, human behaviour and response, scope and objectives of disaster mitigation, preparedness and response, prerequisites for preparedness planning; action plans and procedures, training issues and models, checklists/disaster response planning, roles and responsibilities of various agencies/emergency operations support and management, community participation, public awareness.

Unit -3: Planning for Disaster Prone Areas – II

- Planning for disaster prone areas, disaster mapping, vulnerability analysis, vulnerability atlas, predictability, forecasting and warning, relief measures, reconstruction and rehabilitation,
- Integrating disaster mitigation in spatial planning process: micro zoning.

Unit -4: Disaster Resistant Housing

- Disaster resistant housing construction practices and codes, engineered and non-engineered structures, preparedness for climate change, Steps for formulating a disaster risk reduction plan
- Master Plans and Disaster Preparedness

Criteria for Evaluation and Exam Question Paper Setting:

Total eight questions are to be set, covering the whole syllabus and two questions are required to be set from each unit. Students are required to attempt total five questions i.e. one from each unit.

Core References:

The assigned faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library/on web portals/online. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Department Library & Academic department

IK Gujral Punjab Technical University

Master in Planning (M.Plan. 3rd Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MURP-PE-305(C)/19 (Elective-II)	Project Planning and Management	2 L; 2T	3	3 hours

Course Objective:

To introduce aspects of project planning, management, implementation, monitoring and appraisal.

Course Outcomes:

At the end of the course, the students will able to –

- Describe a project life cycle, and can skilfully map each stage in the cycle.
- Identify the resources needed for each stage, describe the time needed to successfully complete a project.

Detailed Syllabus:

Unit - I: Introduction to Project Planning

- Introduction to Projects; Nature of planning projects; Project Life Cycle;
- Identification of projects

Unit- II: Project formulation and appraisal

- Relationship between projects and planning issues including sectoral policy at: Local, State and National levels
- Project appraisal: Market analysis – Macro environment survey, survey methods, market characterization, demand forecasting;
- Technical Analysis – Magnitude, processes, materials, equipment, factors of production availability, implementation schedule;
- Suitability of the plans, layout and design, location of the project; location analysis; supporting infrastructure requirements- Capital Budgeting – Estimation of costing of components;
- Developing over project cost; Social cost benefit analysis – UNIDO, Merles, ZOPP/GOPP, etc.

Unit- III: Project management

- Project characteristics - pitfalls in management of a project;
- Techniques of management; Planning milestones - responsibility charts and principle responsibility, principles of activity planning;
- Project culture: line management, steering committee, role of project manager; Project Control: cost and time, quality - ISI standards and its application to Indian context;

Unit -IV: Project implementation, monitoring and evaluation

- Project Implementation – methods, hurdles, facilitative factors;
- Introduction to Project Management Software (Ms Projects) and its usage. Types of evaluation - concurrent, ex-ante and ex-post.
- Methods of evaluation, techniques of evaluation, end results, Presentation of evaluation findings, Techniques of Monitoring of Development Works.
- National Rehabilitation and Resettlement Policy (2007) - Social Impact mitigation;
- National Environmental Policy (2006) – Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP)

Criteria for Evaluation and Exam Question Paper Setting:

Total eight questions are to be set, covering the whole syllabus and two questions are required to be set from

Core References:

The assigned faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same in the department library/on web portals/online. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Department Library & Academic department.

IK Gujral Punjab Technical University

Master in Planning (M. Plan. 3rd Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MURP-PE-305(D) /19(Elective-II)	Rural Planning and Development	2 L; 2T	3	3 hours

Course Objective:

To provide exposure to the concepts, initiatives, systems and trends of rural planning and development.

Course Outcomes:

At the end of the course, the students will able to –

- Understand the policies and sectoral policies of rural planning.
- Will learn to raise the quality of life of the people in rural areas.

Detailed Syllabus:

Unit - I: Introduction and Rural development

- Rural settlement planning: - Definition, significance, scope, types, components and salient features of rural settlement planning; Social, economic and administrative structure of village.
- Land use in rural areas: - cultivated land, waste land, and habitable areas.
- Constraints of rural development: - Social, economic and ecological.
- Rural settlement structure and development: - Concept, hierarchy, nature and approaches.
- Land reform systems; Gramin Swaraj; Sarvodaya movement; Five year plans and rural development.
- Planning and development by different agencies: - State Planning Board, District Planning Board, Zila Parishad, Block Samiti, Gram panchayat, District Rural Development Agency – acts, powers and functions.
- Need for Decentralised planning; Sustainable rural development and rural transformation.

Unit- II: Rural Institutional Systems

- 73rd Constitution (Amendment) Act – XI schedule.
- Panchayati Raj institutions – organizational linkages
- District Administration: – Evolution, Functions and Accountability of District Administration

UNIT- III: Resource Based Rural development

- Agricultural Policy and Food Security; Irrigation and Water shed Management; Agro-based industries; Tourism development: agro and eco-tourism.
- Climate change and its effects on the rural economy; Features of rural-urban migration; Disasters and resilience in rural areas.

UNIT- IV: Emerging Trends in Rural Development

- Institutionalization; Resource Mapping and Mobilization in Rural development.
- Information Technology in Rural Planning, Rural Marketing and Rural Finance.

Criteria for Evaluation and Exam Question Paper Setting: -

Total eight questions are to be set, covering the whole syllabus and two questions are required to be set from each unit. Students are required to attempt total five questions i.e. one from each unit.

Core References:

The assigned faculty is required to provide updated references/E-resources related to the content of the

IK Gujral Punjab Technical University

Master in Planning (M. Plan. 3rd Semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MURP-OE-306/19 (Open Elective-I)	MOOC/SWAYAM/NPTEL/ Open learning course relevant to M.Plan course	2 L;2T	3	Certificate to be submitted at the end of the semester

Course Objective:

To provide an overview of various aspects of listed Field /Topic through various sources of learning worldwide.

Course Outcomes:

At the end of the course, the students will able to –

- Understand the need of ICT in Learning..
- Explore wide perspective of Learning beyond the limits of the classroom.

Detailed Syllabus:

Students need to register themselves for an online course related to the field of planning and go through the complete process of online lectures, assignments and examination conducted by the recognised online educational programmes of NPTEL/SWAYAM/GIAN, etc.

The students have to submit a certificate of passing the subject.

Prior approval of the authority/ HOD – Architecture and planning has to be taken by the student before undertaking/ starting/ enrolling for the course.

Teaching Methodology:

Emphasis should be laid on self-learning. Continuous evaluation shall be made of students work based on various assignments done online.

Evaluation Criteria for Exam Question Paper Setting:

The students will be marked for the certificate of successful completion/passing the subject.

I. K. Gujral Punjab Technical University Jalandhar, Kapurthala

Master of Planning Teaching Scheme 2019

Fourth Semester

Course Type	S. no	Course Code	Course Title	Load Allocations					Marks %	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem/ Tut	P/F W	Stu	Total	Int : Ext		
PC	1	UC/MURP-401/19	Planning Thesis	2	-	-	10	**12**	**60:40**	**19**	External Viva Voce
OE	2	UC/MURP/OE-402 (A) – 402 (E)/19	Open Elective – II (MOOC/SWAYAM/NPTEL/ Open learning course relevant to M.Plan course – 3 credits, with prior approval of HOD- Architecture and Planning or can be run at department level)	2	2	-	-	**3**	-	**3**	Certificate to be submitted at the end of the semester/assessment by department.
			Total	4	1	-	10	**15**		**22**	

Note: The selection of MOOCs should be related to the subject substituted as far as possible. The prior approval of the HoD/ Institute is mandatory. The PTU guidelines dated will be followed.

S.No	Open Elective- (Choose any one from the given choices)		MOOC	
1	UC/MURP - OE-402 (A)	Introduction to Philosophical Thoughts	UC/MURP - MOOC-313-16/19 (related to planning)	MOOC-I
2	UC/MURP - OE-402 (B)	ICT for Development	UC/MURP - MOOC- 317-20/19 (related to R.M)	MOOC-II
3	UC/MURP - OE-402 (C)	Soft Skills and Interpersonal Communication	UC/MURP - MOOC -321-24/19 (related to allied planning)	MOOC-III
4	UC/MURP - OE-402 (D)	Introduction to Art and Aesthetic	UC/MURP - MOOC -325-28/19 (related to Legal Services/ Administration/ Personal Development /Health & Happiness / Miscellaneous etc	MOOC-IV
5	UC/MURP - OE-402 (E)	Health and Happiness, well being		

IK Gujral Punjab Technical University

Master in Planning (M. Plan 4th semester)

Course Code	Course Name	L/S, T, P	Credits	Exam Duration
UC/MURP - 401/19	*Planning Thesis*	**2 L; 10 S**	**12**	**External/Internal Viva voce only**

Course Objective

To undertake independent study in the field of Planning . The main objectives of preparing a thesis is to provide an opportunity to each student to undertake a study/research to explore in depth and to develop a subject of his/her own choice demonstrating the ability to use effectively the tools of independent investigation and judgment.

Course Outcomes: At the end of the course, the students will be able to –

1. To have a basic understanding of the area chosen for study (by carrying out a detailed literature review).
2. To undertake detailed exploration of the topic (by way of surveys and studies).
3. To identify issues and concerns those emerge out of the study and suggest recommendations.

Detailed Syllabus:

The students are required to carry out independent research and prepare a thesis on a topic on planning selected by them and approved by the department under the supervision of a research guide allocated by the department. The theme of the thesis should offer scope to adopt a fresh approach in formulating a concept of developing a methodology, effective and useful in the realm of planning fields/concerns/areas. Each student shall prepare thesis on a selected topic under the supervision of a guide.

Both thesis topic and guide shall be approved by dept. The thesis shall forthright be presented in the External/Internal Viva-voce examination, in the form of a report well illustrated by maps, drawings, charts, sketches, photographs, etc. The external viva voce examination should be through the external examiners i.e. outside faulty and a student can appear in external examination only when student clears/passes the internal departmental viva voce.

List of Exercises / Practical:

- Field visit to Collect Data on selected Topic of Research.

List of Assignments/Tests:

- Marked Reviews at different Stages of completion of Research work.
- Internal and External Jury.

Evaluation Criteria: -

Students coming up with the publication of the papers during the course shall be considered for additional weighted out of the 10% marks result as a part of the final report.

The evaluation is to be done through Viva - voce conducted at the institute level by Internal / External jury members appointed in consultation with the university from the approved panel list of examiners.

B.Sc Architecture basics (2020)

REGULATIONS, COURSE STRUCTURE & DETAIL SYLLABUS BASED ON CHOICE BASED CREDIT SYSTEM (CBCS of UGC)

And as per approved NEP-2020

PREAMBLE

The creation of Architecture that endures rather than architecture that surrenders to the latest trends, is a very crucial issue in the education of a professional dealing with architecture consultancy and Allied/Para architecture domain. The practice of architecture, however is not a static endeavour that can be easily defined by fixed and precise characteristics, it evades with the ever changing demands and development of the society. The ability to resist trends yet still respond to most of the changes, it evolves an understanding of the past and present as well as a concern for the future.

Education of such a professional must therefore emphases both continuity and change to prepare the students to meet the demand of the profession as a whole. Given the dynamic & complex nature of architecture, its education involves not only what constitutes a course of study, but how it is delivered. This course curriculum for IKG PTU Main/Constituent campus is an attempt in this direction. All efforts have been taken to incorporate the guidelines of concerned statuary bodies. The syllabus is broadly based on Choice Based Credit System (CBCS) policy of UGC/MHRD(GoI).

The Reason to Start this course:

a) And consequent upon **Supreme court ruling dated 17 March 2020 that Architecture act 1972 protects only the Title and Style of 'Architect' and as per section 37 it do not Prohibit non Architects to practice architecture in the country** and its cognate activities. And a strong realization that a large middle class Indian society by enlarge engage them due to numerous reason, economic consideration is one of the strongest.

b) And it is a matter of acceptance that the society needs to be served well all such intended individuals who have missed the chance to join B.Arch also needs to be equipped/trained in the nuisances of design procedures and skilled to handle their work efficiently.

c) In addition to the above it is evident from the data that not more than 5% graduate architects earn respectfully from their Design Practice all others are in some kind of employment related to Architecture or have diversify in other domains even after spending precious 05 years of their youth.

d) This under graduate course is designed as per the guidelines given by the UGC and flexibility provided & it fulfils the norms of regulatory authorities w.r.t MOOCs and fall in line with the recently approved NEP 2020

Basic Architecture Education

Since architecture is created as synthesis of reason, emotion, and intuition, architectural education should be regarded as the manifestation of the ability to conceptualize, co-ordinate, and execute the idea of building rooted in human tradition. Architecture is an *interdisciplinary field* that comprises several major components which includes Humanities, Social, Physical Sciences and creative arts on one hand and Engineering & Technology on the other hand. This basic course targets to develop the graduate as a generalist able to resolve potential contradictions between different requirements, giving form to the society's and the individual's shelter as well as environmental needs.

The Basic Architecture education involves the acquisition of the following:

- An ability to create architectural designs that satisfy both aesthetics and technical requirements.
- An adequate knowledge of the history and theories of architecture and the related arts, technologies, and human sciences.
- Knowledge of the fine arts as an influence on the quality of architectural design.

- An understanding of the relationship between people and buildings, and between buildings and their environment, and of the need to relate buildings and the spaces between them to human needs and scale.
- An understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take into account social factors.
- An understanding of the methods of investigation and preparation of the brief for a design project.
- An understanding of the structural design, constructional, and engineering problems associated with building design.
- An adequate knowledge of physical problems and technologies and of the function of buildings so as to provide them with internal conditions of comfort and protection against the climate.
- The design skills necessary to meet building user's requirements within the constraints imposed by cost factors and building regulations.
- An adequate knowledge of the industries, organizing, regulations, and procedures involved in translating design concepts into buildings and integrating plans into overall planning.

ARCHITECTURE AS PROFESSION AND AS A BUSINESS:

There is increasing recognition today of Architecture as an intellectual discipline, both as art & science and as a profession. Through architectural design, Architects make vital contribution in defining and shaping our environment and future of society with the use of appropriate technologies for a diverse range of situations, both in the rural and urban contexts.

Considering the diverse Indian complexities in terms of social, cultural, geographical, climatic, economic and technical aspects, which are unique and typical of every region in our country, the task for professionals of Architecture becomes all the more challenging on one hand and paying on other.

Making provision of most optimum and sustainable solutions/ options, to address the basic needs of living, working and care of body and soul (three basic human functions) of even the poorest of the poor, to lead a productive and dignified life, demand appropriate skills, understanding, knowledge and a deep commitment to professed ideals.

Architecture encompasses all four endeavors of human existence i.e. Art, Science, Humanities and Technology. Conventionally Architecture involves three pillars of i) Form ii) Function, iii) Aesthetics, three new pillars are added to the profession in contemporary scenario i.e. iv) Environment v) Energy vi) Management. There had been paradigm shift in the role of such a person in a profession from conventional (i.e. designed focused professional) to team leader or expert (i.e as Coordinator or Facilitator) who work in a team of professionals handling multi dimensional projects with multi disciplinary approach. Architecture therefore now encompasses the *design, visualization, and aesthetic coordination, structural conceptualization, writing skills, effective communicative skills, legal knowledge, specification and supervision and giving responsible direction to the erection of buildings and enhancement of built environment.* The professional practice of architecture further includes the provision/delivery of services in relation with the site, design, physical planning, construction, addition, alteration, renovation, remodeling, restoration, conservation or adaptive reuse of a building or a group of buildings. With this in consideration emphasis is therefore laid in this curriculum for the holistic development of students.

BACKGROUND INFORMATION

To bridges the gap between theory and practice MHRD under AICTE has framed following **larger objectives** of an Architecture program.

1. Understanding the basic philosophy and fundamental principles of the multidimensional aspects and multi-faceted nature of architecture.
2. Preparing the students to acquire and enhance creative problem solving skills including critical thinking and assessment and developing design concepts and solutions and presentation of these skills.
3. Performing standard proficiencies, in harmony with the scope of local practice of architecture in particular and the global practice in general i.e. **making the student market ready or employable.**
4. Preparing the students to work effectively in a multi-disciplinary/inter-disciplinary team in the building industry, by providing 360° knowledge of architecture.
5. Directing and focusing the thrust of architecture education to the needs and demands of society and its integration for social, economic, cultural, and environmental aspects of nation building.
6. Instilling receptiveness to new ideas and knowledge and infusing a sense of scientific research.
7. Developing the overall personality and professional confidence of the student towards all the stakeholders in the building industry.

The objectives of the program are translated into a number of **LEARNING OUTCOMES**. These outcomes are directly related to the profession of architecture, the way it is practiced in the country and the knowledge components that are necessary for such professional practice. Towards the end, the students who complete this program will possess the ability to:

1. Understand the real-life situation in architectural practice and recognize the dialectic relationship between people and the built environment (especially with reference to the Indian sub-continent) with reference to their needs, values, behavioural norms, and social patterns.

2. Thrive in a rigorous intellectual climate which promotes inquiry through design research.

3. Work collaboratively toward synthetic design resolution which integrates an understanding of the requirements, contextual and environmental connections, technological systems and historical meaning with responsible approach to environmental, historical and cultural conservation.

4. Apply visual and verbal communication skills at various stages of the design and delivery process.

5. Produce professional quality graphic presentations and technical drawings/documents.

6. Critically analyze building designs and conduct post-occupancy evaluations.

7. Work in a manner that is consistent with the accepted professional standards and ethical responsibilities.

8. Work in collaboration with and as an integral member of multi-disciplinary/interdisciplinary design and execution teams in the building industry.

9. Conduct independent and directed research to gather information related to the problems in architecture and allied fields

SAILIENT FEATURES OF NATIONAL EDUCATION POLICY 2020

As already approved by the union cabinet in the last week of July 2020 the said policy envisioned:

- India possesses the highest number of young people of any country entering higher education over the next decade, and the extent **to which high quality educational opportunities are presented to them** will determine the direction of the future of India and its people.
- Indeed, with the quickly changing employment and global ecosystem, it is becoming increasingly important that children not only learn, **but learn how to learn**.

- Education must thus, **move towards less content, and more towards learning about how to think critically and solve problems**, how to be creative and multi disciplinary, and how to innovate, adapt, and absorb new material in novel and changing fields.

- Pedagogy must evolve to make education more **experiential, holistic** and integrated, discovery oriented, learner-centered, discussion-based, **flexible**, and, **of course, enjoyable**.

- The curriculum must include basic arts, crafts, humanities, games, sports, languages, literature, culture, and values, in addition to science and mathematics, in order to develop all sides of learners' brains and make education more well-rounded, useful, and fulfilling to the learner.

- Education must aim to be character-making, enabling learners to be ethical, rational, compassionate, and caring, while at the same time preparing them for gainful, fulfilling employment.

- The National Education Policy lays special emphasis on the development of the creative potential of each individual, in all its richness and complexity. It is based on the principle that education must develop not only cognitive skills - both 'foundational skills' of literacy and numeracy and 'higher-order' cognitive skills such as critical thinking and problem solving – but also social and emotional skills - also referred to as 'soft skills' - including cultural awareness and empathy, perseverance and grit, teamwork, leadership, communication, among others.

- The principles that will guide both individual institutions, and the education system at large, are: **flexibility, so that learners have the ability to choose their learning trajectories and programmes, and thereby choose their paths in life according to their own talents interests; no hard separations between arts and sciences, between curricular and extracurricular activities, between vocational and academic, etc., to ensure the integrity and unity of knowledge**

UGC RECOMMENDATIONS FOR UG PROGRAM UNDER CHOICE BASED CREDIT SYSTEM (CBCS):

In light of NEP, UGC has already initiated several steps to bring equity, efficiency and academic excellence in higher education system by including innovation and improvement in course curricula, teaching learning process and examination systems.

The present education system is producing young minds which lack knowledge, confidence, values and skills. There is a big gap in the education, employment and skill development in the present education system and Architecture is no exception to this. There is a dire need to transform the prevalent teacher centric education system to learner centric approach in the entire education delivery mechanism.

This revision is an earnest approach in this direction

There shall be flexibility for students to study the subjects/courses of their choice which may be inter disciplinary, intra disciplinary and skill/vocational based courses. This can be possible by adopting choice based credit system (CBCS) which offers opportunities and avenues to learn professional core subjects along with exploring additional avenues of learning beyond the core subjects for holistic development of an individual.

VISION

To become a Centre of Excellence in Built Environment studies with a strong research and teaching environment that adapts swiftly to the needs of dynamic society, industry and challenges of the 21st century. Target is to produce technically sound, socially responsible professionals suitable for to provide architectural consultancy, serve in the allied architecture and design fields (Para architecture) imbibed with knowledge and values with proficiency in requisite skills. And ready to serve the society in all possible manners.

MISSION

- To create a favourable environment for the students to evolve as persons with high ethical values, professional qualities, creativity and leadership skills to face any real time challenges.

- To impart outcome based education for attaining professional excellence in design and architecture as well as to address futuristic architectural demands.
- To foster creative spirit in our students to evolve as innovative citizens through dedication, responsibility, innovation in training, continuous improvement and conviction in human values.

Framework for B.Sc Architecture Basics Curriculum

The program shall be called Bachelor of Science (Architecture Basics) and shall be of 03 years duration as prescribed by University Grant Commission (UGC) under notification dated July 5, 2014.

The curriculum is divided into 06 semester (Three years) duration after 10+2. The curriculum provides for choice-based learning to make the students explore their own areas of interest by choosing from array of Elective subjects and MOOC courses. Curriculum is carefully distributed into compulsory courses from **Professional Core courses** (PC's), **Building Sciences and Applied Engineering courses** (BS&AE), **Professional Ability enhancement courses** (PAEC), **Skill Enhancement courses** (SEC) and Professional electives (PE) & Open electives (OE). The choice-based learning is introduced in the form of Electives and MOOC's as early as 3rd sem and continue to culmination up to 6th sem. Where in 2nd year (3rd and 4th sem) students can choose two elective/MOOC/ per semester and in 3rd year (5th and 6th sem) students are to choose three electives one each from PAEC/ MOOC, Professional Elective/MOOC and Open Elective/MOOC.The curriculum proposes horizontal and vertical integration of all the courses in a carefully calibrated manner, keeping Professional core (PC) and Building sciences and Applied Engineering (BS &AE) as the central discipline.

ABOUT PC, BS&AE, PAEC AND SEC COMPULSORY COURSES

Compulsory subjects constitutes courses from Professional Core (PC), Building Sciences and Applied Engineering (BS&AE), Professional Skill Enhancement Course (PAEC) and Skill Enhancement Courses (SEC). This program aims at attaining a high level of excellence in Architectural Design (PC) with sound knowledge of Construction (BS&AE). To this end, the Architectural Design and Building Construction & Materials is seen as the core of the program with supportive inputs from skill enhancement courses (SEC) from other streams like Professional, Technological and Humanities to built upon a strong foundation of enabling skills in communications, understanding and analyzing .The emphasis is on the development of faculties of discernment and decision-making with the aid of both objective information and subjective attitudes, based on reason and logic.

The **Professional Core** (PC) consists of Architecture Design, Architecture Drawing, Architecture Graphics/ Presentation, and Building Byelaws and Architecture Legislation. A total of 50 out of 160 credits.

Building Sciences and Applied Engineering courses (BS&AE) consist, Building constructions and Materials, Structure System, Theory of Structure, Structure Design, Surveying & Leveling, Building Services, Estimating Costing & Specification of 54/160 credits.

Professional Ability enhancement courses (PAEC) consists of Theory of Design, History of Architecture , Climate & Architecture & Sustainability, Professional /industrial Training 18/160.

Skill Enhancement courses (SEC) consists of Workshop Practice Communicative English and Communicative Skill Lab, Human Values and professional ethics, Life Skills, Environmental Science, Mentoring and Professional development, Computer Application, Educational Tour/ Summer Training, Constitutional Law and Indian traditional knowledge of 24/160 credits.

Architectural Design, being the core discipline of the course has been dealt in detail and major guidelines have been framed regarding the specific content of these courses. Design tests and group design exercise have been

introduced so as to aim for both individual and collective excellence in equal measure. Special emphasis will be laid on the organization of seminars in all the courses in all streams so that students get opportunities in public speaking and become more articulate in direct presentation of their ideas/thoughts & engage in individual research and holistic development.

As per NEP/UGC guidelines to emphasize on conceptual understanding, on creativity and critical thinking (to encourage logical decision-making and innovation), on values and ethics, and on life skills (e.g., cooperation, teamwork, communication, resilience); subjects on Universal Human Values, Life Skills, Mentoring and Professional ethics are included compulsorily up to 6th semester. It is believed that this will help the students to explore one-self and experience the joy of learning. This shall help them stand up to peer pressure, take decisions with courage, create awareness about the relationship with colleagues and supporting staff in the hostel, department and immediate social environment, etc.

Purpose of this is essentially to create a favourable environment for the students to evolve as persons with high ethical values, professional qualities, creativity and leadership skills to face any real time challenges.

ABOUT VARIOUS PE, OE AND MOOCS

As per UGC guidelines for choice based credit system to shift in focus of education from teacher-centric to Student centric, it is suggested to offer 15% courses as Professional Electives/Department Specific Electives.

A total of 04 Professional electives (PE) one each in 3rd to 6th sem & 02 Open electives (OE) one each in 5th and 6th sem and 02 MOOCs, two each in 3th and 4th sem (of 3 credits each is offered to the students, 30 out of 160 credits in the entire course have been achieved. In addition the students will be encouraged to achieve the target of 24 credits by taking additional MOOC in every semester for pursuing higher studies in the chosen field as envisioned by UGC and considered sufficient to pursue higher education in any particular domain.

Students are given more flexibility by choosing Elective courses of their choice from the following tracks (Table-3):

- Arch Allied
- Design/Arts Allied
- Energy/Environment
- Planning
- Building Science, Applied Engineering, Building Services and Technology
- Various Building Typology

About Open Electives: There shall be flexibility for students to study the subjects/courses of their choice by combining unique combinations which may be inter disciplinary/intra disciplinary. Broad areas defined for open electives are (Table-4):

- Performing Arts
- Journalism/Mass Communication
- Health & Happiness/ Entrepreneurship
- Technology/ Management
- Social Sciences
- Languages

About MOOC courses

A total of 10 MOOC courses with 03 credit each are being offered as per UGC notification July 2016 / IKGPTU guidelines March 2020. Curriculum is designed in such a way the students are given complete flexibility to opt for stream of their choice from available MOOC courses on Swayam portal or elsewhere and they may earn up to maximum of 30 credits by the end of the program by choosing courses from single/multiple tracks. This can help the students to diversify and explore in their field of choice for higher learning, The students will be encouraged to take up additional MOOCs of 03 credits each during the course so as to earn the targeted

minimum 24 credits as this limit (24 credits) are deemed sufficient to satisfy a requirement for admission to any Masters Course as per UGC guidelines.

The broad areas defined are as per following:

- Allied Architecture/Design / Arts
- Energy/Environment
- Planning
- Building Science & Applied Engineering / Building Services / Building Technology
- Computer Science/ Programming/ Data Sciences/ Software's/ Interruptive Technologies such as Artificial Intelligence (AI) , Machine Learning (ML) and Cloud computing (CC) etc
- Management/ Business/ Entrepreneurship
- Humanities/Social Sciences/Education/ Teaching
- Journalism/Mass Communication / Media
- Finance/Commerce/Economics Accounts
- Legal Services/Administration/ Personal Development / Health & Happiness / Gaming/Miscellaneous

Table; showing the skeleton of the B.Sc (AB) of PC, BS & AE, PAEC, SEC, PE, OE and their respective credits

Semester	PC/ (Credits)	BS & AE/ (Credits)	PAEC/ (Credits)	SEC/(Credits)	DSE/ PE (Credits)	GE/ OE (Credits)	G. Total (Credits)
1st	PC- 1/ (5)	BS & AE-1/ (4)	—	SEC- 1/ (1)			
	PC -2/ (4)			SEC -2/ (2)			
	PC -3/ (3)	BS & AE-2/ (3)		SEC -3/ (1)			
				SEC- 4/ (2)			
2nd	PC- 4/ (5)	BS & AE-3/ (4)	PAEC-1/ (3)	SEC- 5/ (1)			
	PC- 5/ (4)						
	PC- 6/ (3)	BS & AE-4/ (3)		SEC- 6/ (3)			
3rd	PC -7/ (5)	BS & AE- 5/ (4)	PAEC -2/ (3)	SEC -7/ (3)	PE-1/ (3)		
	PC-8/ (3)	BS & AE- 6/ (3)	MOOC-1/ (3)	SEC- 8/ (1)	MOOC-2/ (3)		
		BS & AE 7/ (3)					
4th	PC -9/ (5)	BS & AE -8/ (4)	PAEC -3/ (3)	SEC -9/ (3)	PE-2/ (3)		
		BS & AE -9/ (3)	PAEC -4/ (3)		MOOC-4/ (3)		
		BS & AE -10/ (3)	MOOC-3/ (3)				
5th	PC -10/ (5)	BS & AE- 11/ (4)	PAEC- 5/ (3)	SEC -10/ (1)	PE -1/ (3)	OE -1/ (3)	
		BS & AE- 12/ (3)	PAEC -6/ (3)		MOOC-6/ (3	MOOC-7/ (3)	
		BS & AE -13/ (3)	MOOC-5/ (3				
6th	PC -11/ (5)	BS & AE- 14/ (4)		SEC -11/ (2)	PE- 2/ (3)	OE- 2/ (3)	
	PC -12/ (3)	BS & AE-15/ (3)		MOOC-8/ (3	MOOC-9/ (3)	MOOC-10/ (3)	
		BS & AE -16/ (3)					
Total BSc AB courses/credits	12/ (50)	16/ (54)	6/ (18)	11/ (20)	4/ (12)	2/ (6)	51/ (160)

CHOICES AVAILABLE

The students after pursuing B.Sc (AB) have numerous options, few of them are:

a) Join Design Stream, Pursue Masters in design and become product/ graphic/ industrial designer.
b) Pursue Masters in Interior design or Urban design and landscape designer.
c) Specialize in Planning stream/ building science stream or building services stream

d) Diversify to become a social scientist. Pursue Masters Degree in History, Sociology, and Psychology, Philosophy or Rural studies. Any combination to crack the prestigious competitive examination. Or they can choose to become an author/ be an architectural historian.
e) Be a Journalist/ media professional by choosing the mass communication stream.
f) Get absorb in Tourism and Travel Industry, which thrives on knowing the past / heritage. Act as tour manager or travel guide, and the hospitality sector as an expert in built heritage.
g) Enter the domain of management profession after pursuing MBA
    (1) Specialize in finance- enter huge banking and insurance sector.
    (2) Specialize in HR- manage the human resource of construction related Companies
h) Person with creative bent of mind will be able to pursue higher education in fine arts/ performing arts/ visual arts or applied arts.
i) Be a web designer/ gaming designer or join animation industry.
j) Post globalisation legal issues arising in the building industry have increased many folds. One can join law/ legal services.
k) Be a Surveyor/ Valuer/ Arbitrator/ Property consultant/ Real Estate Developer
l) Become a environmentalist.
m) Enter the domain of research and be a building scientist/ researcher.
n) Various disruptive technologies like Artificial Intelligence (AI), Machine Learning (ML), Nano Science (NS), Cloud Computing (CC), and Data Science have lot to offer.
o) Be proud to join Indian Army, Administrative services or simply politics.

Programme Specific Objectives: Keeping in view MHRD and CoA guidelines Program objectives are been framed. These objectives are aimed at integrating knowledge based and skill based pedagogies which is essential to make the students responsive and sensitive Professionals and lead to the holistic development of students

By the end of programme the student shall be able to:

- Take & thoroughly execute client's instructions and prepare design briefs & feasibility reports.
- Evaluate every site, analyse the impact of existing and any proposed development on its immediate environs & prepare environment impact assessment reports
- Propose architectural design of any building project in totality, i.e. fulfil its stated function, suggest most appropriate structure system & make it appealing in the given budget in a most sustainable manner, appropriate for the given climate.
- Prepare the proposal for the overall development of site.
- Tackle issues related to Public Health & Building services efficiently.
- The proposal so prepared should be in line with Building Regulations applicable to the site/area.
- In addition to the above the students will be able to propose: Interior design, landscape design, Graphic & signage design etc.

To achieve the above stated objectives of the 03 years course of B.Sc Arch basics, target to achieve is also divided in the following 03 stages:

PO1 – (First Year):

- To train the students to understand the Principles & Elements of design and to handle basic single/double space designs solutions and prepare its drawings using fundamental construction techniques.

- He should be able to prepare the presentation drawings with model and communicate it well with the client.

Expected Outcome:

The students will be able to understand the Principles & Elements of design and will be able to prepare drawings using fundamental construction techniques. Students shall be able to communicate and present their work satisfactorily.

PO2 – (Second Year)

- To train the students to handle projects of medium complexity having fixed requirements with maximum two floors. So that he/she understand the concept of vertical circulation and can work out fundamental Building Services and issues of public health, as well.
- This will be able to suggest improvement/ additions in Rural setups.
- He/she should be able to prepare the drawings using computers basic 2d software's
- Able to understand the Importance of climatology along with surveying and levelling so that proposals are climate responsive and appropriate sited.
- The understanding of various Architecture Theories and knowledge of history of architecture is enhanced for better design outputs.
- Prepare measure /drawing documentation
- Understand the trends of Indian Traditional/Indigenous/Rural Architecture

Expected Outcome

- The student will learn to handle small projects with fixed requirements. They shall be able to prepare drawings using 2D software's. They shall develop understanding of Climatology, Survey, and Architectural Theories.

PO3 – (Third Year)

- To equip the student with the design skills to handle more than two floor (walk up buildings) with complex building requirements & site needs addressing the environment protection, fire safety and earthquake resistances and other Codal provisions as per NBC and local building byelaws/regulations.
- At this stage students will be able to design buildings needed/required by the middle income group of the Indian society.
- He/ She will be able to design the basic bulk active structure and prepare structural drawings along with specification writing and cost estimates.
- Prepare municipality drawings.
- Understand the trends of world architecture

Expected Outcome

- The students will be able to handle complex projects of more than two floors with all amenities. They shall be able to prepare complete set of working, Structural, Public health drawings along with specifications and estimates and schedules.

SEMESTER WISE COURSE STRUCTURE:

FIRST YEAR

1st SEMESTER

Course Type	S. No	Course Code	Course Title	Load Allocations					Marks %	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem / Tut	P/ FW	Stu	Total	Int : Ext		
PC	1	UC/BSCAB-101/20	Architectural Design & Theory-I	1	-	-	4	05	60:40	5	06 + Ext. Viva Voce
	2	UC/BSCAB-102/20	Architectural Drawing-I	1	-	-	3	04	60:40	4	03
	3	UC/BSCAB-103/20	Architectural Graphics-I	1	-	-	2	03	60:40	3	03
BS & AE	4	UC/BSCAB-104/20	Building Construction & Materials-I	1	-	-	3	04	60:40	4	03
	5	UC/BSCAB-105/20	Structure Systems	3	-	-	-	03	60:40	3	No Exam, only Ext. jury Viva-Voce
SEC	6	UC/BSCAB-106/20	Workshop-I	-	-	2	-	02	60:40	1	No Exam, only Int. jury Viva-Voce
	7	UC/BTHU-101/18	Communicative English	2	-	-	-	02	40:60	2	03
	8	UC/BTHU-102/18	Communicative Skill Laboratory		-	2	-	02	60:40	1	No Exam, only Ext. jury Viva-Voce
	9	UC/BSCAB-107/20	Human Values and Professional Ethics	1	2	-	-	03	40:60	2	03
	10	UC/BSCAB-108/20	Life skills-I	1	-	-	-	01	S/US	NC	No Exam
			Total					29		25	

2nd SEMESTER

Course Type	S. No	Course Code	Course Title	Load Allocations					Marks %	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem / Tut	P/ FW	Stu	Total	Int : Ext		
PC	1	UC/BSCAB-201/20	Architectural Design -II	1	-	-	4	05	60:40	5	06 + Ext. Viva Voce
	2	UC/BSCAB-202/20	Architectural Drawing-II	1	-	-	3	04	60:40	4	03
	3	UC/BSCAB-203/20	Architectural Graphics-II	1	-	-	2	03	60:40	3	03
BS & AE	4	UC/BSCAB-204/20	Building Construction & Materials-II	1	-		3	04	60:40	4	03
	5	UC/BSCAB-205/20	Theory of Structure- I	2	2	-	-	04	40:60	3	03
PAEC	6	UC/BSCAB-206/20	Theory of Design- I	3	-	-	-	03	40:60	3	03
SEC	7	UC/BSCAB-207/20	Workshop-II	-	-	2	-	02	60:40	1	No Exam, only Int. jury Viva-Voce
	8	UC/BSCAB-208/20	Environmental Science	3	-	-	-	03	40:60	3	03
	9	UC/BSCAB-209/20	Mentoring & Professional Development- I	-	-	2	-	02	S/US	NC	No Exam
	10	----	*Educational Tour I/ Summer Vocational Training-I/ Vacation Assignment-I	-	-	-	-	-	-	-	Evaluation will be done in 3rd sem
		Total						30		26	

*NOTE: Educational Tour of 1-2 week duration during or after the first year of studies must be undertaken and Summer Training/ Vacation assignment to be given based on UC/BSCAB-209/20. The marking of the same will done in the third semester UC/BSCAB-309/20

SECOND YEAR

3rd SEMESTER

Course Type	S. No	Course Code	Course Title	Load Allocations					Marks %	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem / Tut	P/ FW	Stu	Total	Int : Ext		
PC	1	UC/BSCAB-301/20	Architectural Design -III	1	-	-	4	05	60:40	5	06 + Ext. Viva Voce
BS & AE	2	UC/BSCAB-302/20	Building Construction & Materials-III	1	-	-	3	04	60:40	4	03
	3	UC/BSCAB-303/20	Structure Design-I	2	2	-	-	04	40:60	3	03
	4	UC/BSCAB-304/20	Surveying & Leveling-I	2	-	2	-	04	40:60	3	03
PAEC	5	UC/BSCAB-305/20	Theory of Design- II	3	-	-	-	03	40:60	3	03
		UC/BSCAB/MOOC-306 (-)/20	MOOC-I (Ref Table ____)	-	-	-	-	-	-		Certificate from imparting agency
SEC	6	UC/BSCAB-307/20	Computer Application-I	2	-	2	-	04	60:40	3	No Exam, only Ext. jury Viva-Voce
	7	UC/BSCAB-308/20	Life skills-II	1	-	-	-	01	-	NC	No Exam
	8	*UC/BSCAB-309/20	* Educational Tour I/ Summer Vocational Training-I / Vacation Assignment-I	-	-	-	-	-	100	2	No Exam, only Int. jury Viva-Voce
PE	9	UC/BSCAB/PE -310(-)/20	Professional Elective-I (Ref Table -----)	3	-	-	-	03	40:60	3	03
		UC/BSCAB/PE/MOOC -311(-)/20	MOOC-II (Ref Table-___)	-	-	-	-	-	-		Certificate from imparting agency
	Total							28	-	26	

NOTE: * UC/BSCAB-309/20 is carried out in the intervening period of 2nd and 3rd semester, the evaluation of report/s to be done in the 3rd semester.

Course Type	S. No	Course Code	Course Title	Load Allocations					Marks %	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem / Tut	P/ FW	Stu	Total	Int : Ext		
PC	1	UC/BSCAB-401/20	Architectural Design –IV	1	-	-	4	05	60:40	5	06 + Ext. Viva Voce
BS & AE	2	UC/BSCAB-402/20	Building Construction & Materials-IV	1	-	-	3	04	60:40	4	03
	3	UC/BSCAB-403/20	Structure Design-II	2	2	-	-	04	40:60	3	03
	4	UC/BSCAB-404/20	Building Services-I	3	-	-	-	03	40:60	3	03
PAEC	5	UC/BSCAB-405/20	History of Architecture-I	3	-	-	-	03	40:60	3	03
		UC/BSCAB/MOOC-406 (-)/20	MOOC-III (Ref Table ____)	-	-	-	-	-	-		Certificate from imparting agency
	6	UC/BSCAB-407/20	Climate & Architecture-I	3	-	-	-	03	40:60	3	03
SEC	7	UC/BSCAB-408/20	Computer Application-II	2	-	2	-	04	100	3	No Exam only Ext. jury Viva-Voce
	8	UC/BSCAB-409/20	Mentoring and Professional Development-II	-	-	2	-	02	100	NC	No Exam
	9	---	*Education Tour II / Summer Vocational Training II /Vacation Assignment II	-	-	-	-	-	–	–	The evaluation will be done in 5th sem
PE	10	UC/BSCAB/PE/-410(-)/20	Professional Elective-II(Ref Table -----)	3	-	-	-	03	40:60	3	03
		UC/BSCAB/MOOC -411-420/20	MOOC-IV (Ref Table-___)	-	-	-	-	-	-		Certificate from imparting agency
	Total							31		27	

4TH SEMESTER

*NOTE: Educational Tour of 1-2 week duration during or after the IInd year of studies (as a Measure drawing /Documentation Camp) should be undertaken and Summer Training/ Vacation assignment to be given based on UC/BSCAB-409/20. The marking of the same will done in the fifth semester UC/BSCAB-508/20

THIRD YEAR

5TH SEMESTER

Course Type	S. No	Course Code	Course Title	Load Allocations					Marks %	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem / Tut	P/ FW	Stu	Total	Int : Ext		
PC	1	UC/BSCAB-501/20	Architectural Design –V (Research methods and dissertation-1)	1	-	-	4	05	60:40	5	03 hrs for RM + int. jury Viva Voce of dissertation
BS & AE	2	UC/BSCAB-502/20	Building Construction & Materials-V	1	-	-	3	04	60:40	4	03
	3	UC/BSCAB-503/20	Structure Design-III	2	2	-	-	04	40:60	3	03
	4	UC/BSCAB-504/20	Building Services-II	3	-	-	-	03	40:60	3	03
PAEC	5	UC/BSCAB-505/20	History of Architecture-II	3	-	-	-	03	40:60	3	03
	any one	UC/BSCAB- MOOC-506(-) /20	MOOC-V (Ref Table ____)	-	-	-	-	-	-		Certificate from imparting agency
	6	UC/BSCAB-507/20	Climate & Architecture(Sustainable Design) -II	3	-	-	-	03	40:60	3	03
SEC	7	UC/BSCAB-508/20	Life skills-III	1	-	-	-	01	-	NC	No Exam
	8	UC/BSCAB-509/20	*Educational Tour II/ Summer Vocational Training-II/Vacation Assignment-II	-	-	-	-	-	100	2	Int. jury Viva-Voce
PE (choose one)	9	UC/BSCAB-PE-510(-)/20	Professional Elective- III (Ref Table-_)	3	-	-	-	03	40:60	3	03 (Question Bank)
		UC/BSCAB-MOOC -511(-)/20	MOOC-VI (Ref Table-_)	-	-	-	-	-	-		Certificate from imparting agency
OE (choose one)	10	UC/BSCAB/OE-512(-)/20	Open Elective- I (Ref Table-_)	3	-	-	-	03	40:60	3	03 (Question Bank)
		UC/BSCAB/MOOC-513(-)/20	MOOC-VII (Ref Table-_)	-	-	-	-	-	-		Certificate from imparting agency
	Total							29		29	

Note: * UC/BSCAB-50__/20 is carried out in the intervening period of 4th and 5th semester, the evaluation of report/s to be done in the 5th semester.

6TH SEMESTER

Course Type	S. No	Course Code	Course Title	Load Allocations					Marks %	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem / Tut	P/ FW	Stu	Total	Int : Ext		
PC	1	UC/BSCAB-601/20	Architectural Design (Major Project) -VI	1	-	-	4	05	60:40	5	12 (in 2 days) + Ext. Viva Voce
	2	UC/BSCAB-602/20	Architecture Legislation -I	2	2	-	-	04	40:60	3	03
BS & AE	3	UC/BSCAB-603/20	Building Construction & Materials-VI	1	-	-	3	04	60:40	4	03
	4	UC/BSCAB-604/20	Structure Design (Project) - IV	2	2	-	-	04	60:40	3	03
	5	UC/BSCAB-605/20	Estimating Costing & Specifications-I	2	2	-	-	04	40:60	3	03
SEC	6	UC/BSCAB-606/20	Constitutional Law/Indian Traditional knowledge	2	-	-	-	02	40:60	2	03
		UC/BSCAB-MOOC 607/20	MOOC- VIII(Ref Table ____)	-	-	-	-	-	-		Certificate from imparting agency
	7	UC/BSCAB-607/20	Mentoring and Professional Development-III	2	-	-	-	02	100	NC	No Exam
PE (Choose one)	9	UC/BSCAB/PE-610-615/20	Professional Elective- IV (Ref Table-___)	3	-	-	-	03	40:60	3	03 (Question Bank)
		UC/BSCAB/MOOC/PE -621-630/20	MOOC-IX (Ref Table-___)	-	-	-	-	-	-		Certificate from imparting agency
OE (Choose one)	10	UC/BSCAB/OE-616-620/20	Open Elective- II (Ref Table-4)	3	-	-	-	03	40:60	3	03 (Question Bank)
		UC/BSCAB/MOOC/ OE-631-640/20	MOOC-X (Ref Table-___)	-	-	-	-	-	-		Certificate from imparting agency
	Total							31		26	

Table-1 (Abbreviation Used)

Table - 1

Abbreviation Used in the teaching scheme			
PC	Professional Core	L	Lecture
BS & AE	Building Science & Applied Engineering	Sem/Tut	Seminar/ Tutorial
PAEC	Professional Ability Enhancement Compulsory	P/FW	Practical/ Field Work
SEC	Skill Enhancement Courses	Stu	Studio
PE	Professional Electives	Int.	Internal
OE	Open Elective	Ext.	External
MOOC	Massive Open Online Courses	S/US	Satisfactory/Un-Satisfactory
BS/BT	Building Services/ Building Technology	NC	Non Credit

Table-2 Semester/Year-wise credits

	BSc . Arch Basics	
Sem.	Credits	Year wise
I.	25	51
II.	26	
III.	26	53
IV.	27	
V.	29	56
VI.	27	
Total	160	160

Table no-3 Codes assigned to Professional Electives (Stream/Track wise) BSc Architecture Basics (BSc AB).

Track	Stream/ core area	3rd sem UC/BScAB-PE	4th sem UC/BScAB- PE	5th sem UC/BScAB-PE	6th sem UC/BScAB-PE
		PE-I	PE-II	PE-III	PE-IV
T1	Allied Arch	Hill Architecture	Traditional Indian Architecture		
	Code				
T2	Allied Design/ Arts	Interior Design	Landscape Design		
	Code				
T3	Energy/ Environment	Ecology	Green Buildings & Rating Systems		
	Code				
T4	Planning	Principles of Human Settlement	Smart Cities/ Real Estate development		
	Code				
T5	BS & AE/BS/BT	Building Industry/ Building Economics	GIS/Remote Sensing/ Geo Spatial Technologies		
	Code				
T6	Building Typology	Design for Containment	Design for Animals & Plants		
	Code				

Updated & Added in the syllabus. Soft copy of the

Table no-4 Codes assigned to Open Electives (Track wise) BSc Architecture Basics (BSc AB).

S. No	Track	Stream	5 th sem UC/BSCAB/ OE/----	6 th sem UC/BSCAB/ OE/----
1	T1	Performing Arts	OE-I	OE-II
		Code	Music	Dance
2	T2	Journalism/ mass communication	Creative Writing – I	Creative Writing – II
		Code		
3	T3	Health & Happiness/ Entrepreneurship	Health Education – I	Health Education – II
		Code		
4	T4	Technology/ Management	Laser Technology & Architecture	Printing Tech. & Arch.
		Code		
5	T5	Social Sciences	Sociology VS Architecture	Psychology VS Architecture
		Code		

Table-5.

S.no	Track	MOOC
1	T1	Allied Architecture/Design / Arts
2	T2	Energy/Environment
3	T3	Planning
4	T4	Building Science & Applied Engineering / Building Services / Building Technology
5	T5	Computer Science/ Programming/ Data Sciences/ Software's/ Interruptive Technologies
6	T6	Management/ Business/ Entrepreneurship
7	T7	Humanities/Social Sciences/Education/ Teaching
8	T8	Journalism/Mass Communication / Media
9	T9	Finance/Commerce/Economics Accounts
10	T10	Legal Services/Administration/ Personal Development / Health & Happiness / Miscellaneous

Table no-5 Codes assigned to MOOC's (Stream/Track wise) BSc Architecture Basics (BSc AB).

Syllabus of

Bachelors of Science (Architecture Basics)
(1st Semester)

Batch 2020 onwards

By

Department of Architecture
IK Gujral Punjab Technical Universit

IK Gujral Punjab Technical University

Bachelor of Science (Architecture Basics - 1st Semester)

Course Code	Course Name	1L, 4 Stu	Int. : Ext.	Duration of Exam
UC/BSCAB-101/20	Architectural Design & Theory – 1	Credits - 05	60:40	06 + Ext. Viva Voce

Course Objective:

The main objective of the course is to get the students interested in and to familiarize them with the basic concepts of Design. To enhance and promote visualization, expressional skills and sensitivity to surrounding environment and to develop the ability to translate principle of design into architecture solution.

Course Outcomes:

At the end of the course, the students will able to-

- Understand & will gain a fundamental knowledge of architecture design and its basic principles.
- To apply visual and formal analysis of architecture in their mind and they will be able to appreciate well-designed buildings.
- Understand the skill required to interpret a work of architecture and to evaluate, identify and analyse artistic expression of architectural forms.
- Understand the relationship between human activities of Space.

Detailed Syllabus:

UNIT-I (Theory)

- Introduction to Basic Design
- Objectives of Design
- Elements of Design
- Principles of Design
- Scale and proportion in Architecture.
- Anthropometrics (including norms for physically challenged persons)
- Human functions and their interactions for space requirements.
- Minimum and optimum areas for various human activities & functions.

UNIT-II (Design Exercise & Application)

- 2D compositions with basic geometric shapes, colour, texture and pattern.
- Floor tile design, carpet, mural, door paving patterns, Sky line of city/village
- Experience in 3D Design, compositions with simple forms like cube, cuboids, cylinder, cone, prism etc.
- Compositions with 3-D Solids.
  Note - Stress is given to 2D, 3D exercise**(Black & white and colours.)**
- Functional furniture layout, circulation as anthropometric/Activity pattern

Evaluation Criteria for Exam / Question Paper Setting:

The examiner will set five questions from Unit- I and two from Unit-III& students are required to attempt any three question from Unit-I and only one from Unit-III during the six hour examination. No question to be set from Unit- II

Important Note:

The evaluation is to be done through Viva - voce conducted at the institute level by Internal / External jury members appointed in consultation with the university from the appointed panel list of examiners. The answer sheet shall be retained at the institute after the exam for the jury viva voce.

Instructions for the Faculty:

Design faculty should encourage and motivate the students for live projects of their immediate surrounding. (Identifying need, Framing requirements and solution for the same and it should be marked as an assignment.) The stress should be given on making students grasp the concept and do the design assignment as a creative fun activity.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University

Bachelor of Science (Architecture Basics - 1st Semester)

Course Code	Course Name	L - 1, ST - 3	Int. : Ext.	Duration of Exam
UC/BSCAB-102/20	**Architectural Drawing –I**	**Credits - 04**	**60:40**	**03 Hours**

Course Objective:

The objective is to make the students familiarize with good drafting and lettering techniques use in architecture. To gain the basic knowledge for preparing the architectural drawings by learning about the orthographic projections of simple geometric forms and representation of 3-D & 2-D forms.

Course Outcomes:

At the end of the course, the students will able to –

- Gain the comprehensive understanding of the fundamental techniques of technical drawing and its architectural representation.
- Attain the knowledge to visualize the geometrical forms through plans, elevations and sections.

Detailed Syllabus:

UNIT- I

- Drafting – Technique & its Principles
- Line - Types of Lines and Dimensioning of line
- Lettering - free hand & block lettering
- Scales – Different types of scales and its uses in the Architectural Drawing.

UNIT- II

- Orthographic Projections - Point, Lines, Plane and Solid in various positions in the First Quadrant.

UNIT- III

- Section of Solids- Cube, Cuboids, Cone, Cylinder, Pyramid, Prism etc.

UNIT- IV

- Development of Surfaces - Simple Geometrical Solids (Cube, Cuboids, Cone, Cylinder, Pyramid, Prism etc.)
- Interpenetration of Solids

Instructions for the Faculty:

Emphasis should be laid on learning by doing and students have to be encouraged to make proper models to understand the geometry of forms.

Evaluation Criteria for Exam / Question Paper Setting:

Total eight questions are to be set (two questions from each unit) and the students are required to attempt total four questions (one from each unit).

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University

Bachelor of Science (Architecture Basics - 1st Semester)

Course Code	Course Name	L - 1, ST - 2	Int. : Ext.	Duration of Exam
UC/BSCAB-103/20	**Architectural Graphics –I**	**Credits - 03**	**60:40**	**03 Hours**

Course Objective:

The objective is to make the students familiar with visual arts and its basic principles and to explore the potential of Pencil of different grades and Coloured pencils as a powerful tool of Graphic Communication.

Course Outcomes:

At the end of the course, the students will able to –

- Gain a fundamental knowledge of architecture Graphics and its principles.
- Achieved a comprehensive understanding of architectural presentation techniques.

Detailed Syllabus:

UNIT- I (Pencil as fundamental tool of drawing)

- Free hand line-work with different strokes/grades in pencil.
- Effect of light and shade on simple geometrical solids.
- Textures of different building materials (such as bricks, stones, grass, glass, timber etc.) in pencil through shading and surface finishes of wall and floor.
- B/W Composition by using different geometric forms with charcoal pencil.

UNIT- II (Pencil as presentation medium)

- Freehand (proportionate) sketching of human figures, different types of vegetation, different transport modes and buildings etc.
- Indoor and outdoor furniture/antique items & Staircase-shading/role with light
- Sketches of scenes and activities from memory involving public spaces, markets, festivals, recreational spaces etc.
- Live sketching – indoor and outdoor area

UNIT-III (Rendering with coloured pencils/crayons/dry pastels)

- Colour rendering of human figures, different types of vegetation, different transport modes and buildings etc.
- Colour Rendering of various scenes such as Garden/Park Scene, Street Scene, Lake Scene, Village/Market Scene, etc.
- Live sketching – indoor and outdoor area
- Role of light in rendering co-relation with different shapes of geometry and some building elements.

UNIT-IV (Art & Illusion)

- Different exercises involving Logo Design, Collage making etc.
- Mural and Sculpture design in different materials like PoP, Clay, ceramic/Mosaic etc.

Instructions for the Faculty:

- Workshops related to pencil rendering will also be organised, highlighting its technique and style which can be organised indoor or outdoor. The students must be encouraged to appreciate the natural/man-made landscape and to understand the interrelationship of nature and architecture.

Evaluation Criteria for Exam / Question Paper Setting:

Total four questions are to be 01 from each the units and students are required to attempt all the questions.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University

Bachelor of Science (Architecture Basics - 1st Semester)

Course Code	Course Name	L - 1, ST - 3	Int. : Ext.	Duration of Exam
UC/BSCAB-104/20	Building Construction & Materials - I	Credits - 04	60:40	03 Hours

Course Objective:

- The objective is to introduce the elementary building materials and their applications. To familiarize students with construction details of various components of construction.

Course Outcomes:

At the end of the course, the students will able to –

- Understand the properties, types, uses and application of various building materials i.e. brick, lime, cement, mortar, sand, stones etc.
- Gain the fundamental knowledge of building Construction especially in brick and stone.

Detailed Syllabus (This subject consists of two Parts)

Part A: Building Materials

UNIT-I (Brick and Mortar)

- Brief introduction to mud, sand, clay, shurkhi, aggregates, lime and cement etc.
- Different types of mortar like mud mortar, lime mortar, cement mortar etc.- their properties and uses
- Manufacturing process, Classification &types, uses, sizes and properties of bricks
- Cost-effective bricks, AAC blocks, Fly-ash bricks etc. – their properties and uses in construction industry.

UNIT-II (Stone)

- Classification &types, uses, sizes and properties of Stone available in India
- Stone – quarrying process, its dressing, and deterioration and preservation measures.
- Application properties and visual check for different types of stone.
- Properties and uses of artificial stone.

Part B: Building Construction

UNIT-III (Brick masonry)

- Introduction to various components of a building (sub-structure to super-structure), their structural and functional roles.
- Brick masonry –different types of bonds (English, Flemish, Rat trap, etc.) and junctions (L-junctions, T-Junctions, cross junction) of varying wall thickness (not more that 2 brick thick).
- Attached and detached brick Piers of varying thickness (not more than 3'-0")
- Brick jalli-design and construction details

UNIT-IV (Stone masonry)

- Stone masonry of various types
- Lintels and sill level details
- Coping and threshold details.
- Arches-Flat, Segmental and Semi-circular

Instructions for the Faculty:

- The assigned Faculty is advised to undertake 2-3 site visits for better understanding of Brick/Stone bonds, Brick jalli and different types of exterior finishes

Evaluation Criteria for Exam / Question Paper Setting:

Total eight questions are to be set two from each unit & students are required to attempt total four questions i.e. one from each unit. The distribution of marks for **Part A** (Unit I&II): **Part B** (Unit III&IV) is 12: 28 marks.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University

Bachelor of Science (Architecture Basics - 1st Semester)

Course Code	Course Name	L-3	Int. : Ext.	Duration of Exam
UC/BSCAB-105/20	**Structure Systems - I**	**Credits - 03**	**60:40**	**No exam only External viva-voce**

Course Objective:

To inculcate in the student an awareness of basic structural principles in structural system ,with emphasis on learning by doing and making 3-D models to provide the student with different spatial experience. To make them understand the concept behind every structural form.

Course Outcomes:

At the end of the course, the students will able to – Understand the needs, requirements, and selection for various types of structures, the architectural features and necessity of choosing the correct structure system, comprehend the design principles and applications of different structural systems.

Detailed Syllabus

UNIT-I (CELLULAR SYSTEM)

Cellular System; Cell as a natural unit of space, Cell transformation, Polygonal Cellular Systems leading to evolution of Geodesic Domes, Applications of Cellular System in Building case studies

Bulk Active Structure System; Slabs (One way & Two way),Beams (Simply supported, Cantilever, Continuous, Vierendeel Girders), etc, Grid (Skew & Square Grid),Columns (short & long), Applications of Bulk active systems in buildings case studies.

UNIT-II Vector-active structure system: Space frames, Trusses (Timber & Steel).,Domes (Ribbed & Geodesic) Structure acting mainly through axis: Lattice structure, Polyhedron structure, Tree type. Applications of vector active structural systems in buildings, advantages & disadvantages if any, case studies.

UNIT-III **UNIT –III**

Form Active Structural System Cable Structures (Roofs, Bridges etc.),Tents Structures, Pneumatic Structure. Applications of form active systems in buildings case studies.
Surface active Structure System: Shells, Folded Plates, etc.

UNIT-I UNIT-IV

Structure System for High Rise Buildings, case studies.

Evaluation Criteria for Exam / Question Paper Setting:

Evaluation of students shall be done by an External Jury constituted by the Director/ Principal of the Institute based on the Viva- voce and the work done by the students

Instructions for the Faculty:

- Emphasis shall be laid on learning by doing by making of 3-D models to give the students an idea of different spatial experience.
- The teaching in this subject must bring out:
  - (i) The predominantly pictorial nature of the Architects' language.
  - (ii) The physical - mechanical essence of the Subject matter.
  - (iii) The orientation of all Architectural efforts to Form and Space.
- Stress should be laid on understanding the force distribution and principle of equilibrium. Case studies of structure done by renowned Architects/ Engineers be made an integral part of learning.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University

Bachelor of Science (Architecture Basics - 1st Semester)

Course Code	Course Name	P - 2	Int. : Ext.	Duration of Exam
UC/BSCAB-106/20	Workshop – I	Credits - 01	60:40	No exam only Internal viva-voce

Course Objective:

The student will gain basic hands on experience and fundamental knowledge in carpentry, brick masonry and model making.

Course Outcomes:

At the end of the course, the students will able to –

- Gain the basics knowledge of the carpentry tools, its joints and brick laying bonds
- Attain skill to work with different materials for making architectural model.

Detailed Syllabus:

UNIT-I

- Carpentry – Introduction to the types, use of carpentry Tools and various joints in Carpentry.
- Brick/Stone Masonry – Low height wall construction by using either bricks or stones for the understanding of various bonds, jallies etc.

UNIT-II

- Model Making—making of different types of trees and other landscape elements like street lamps, pathways, plantation, water-bodies and different types of automobiles.
- Preparation of wooden base for modelmaking.

Instructions for the Faculty:

- The Faculty is required to give a complete demonstration of brick work, stone work, textured & timber work and other exterior finishes through audio-visual aids, to be presented to the students.
- The Faculty is advised to take the students for site visits and the work of wall construction shall be attempted in groups.

Evaluation Criteria for Exam / Question Paper Setting:

In the end of the semester internal jury Viva-voce to be conducted (the jury comprises of the subject incharge and the HoD nominee)

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University

Bachelor of Science (Architecture Basics - 1st Semester)

Course Code	Course Name	2 - L	Int. : Ext.	Duration of Exam
UC-BTHU101-18	**Communicative English**	**Credit - 2**	**60:40**	**03 Hours**

Course Objective:

The student will gain basic hands on experience and fundamental knowledge English and become the independent users of English Language.

Course Outcomes:

At the end of the course, the students will able to –

- Have proficiency in reading & listening, comprehension, writing and speaking skills.
- Understand spoken and written English language, particularly the language of their chosen technical field.
- Converse fluently.
- Produce clear and coherent texts on their own.

Detailed Syllabus:

UNIT-I Vocabulary Building & Basic Writing Skills

- The concept of Word Formation
- Root words from foreign languages and their use in English
- Acquaintance with prefixes and suffixes from foreign languages in English to
- form derivatives.
- Synonyms, antonyms, and standard abbreviations.
- Sentence Structures
- Use of phrases and clauses in sentences
- Importance of proper punctuation
- Creating coherence
- Organizing principles of paragraphs in documents
- Techniques for writing precisely

UNIT-II Identifying Common Errors in Writing

- Subject-verb agreement
- Noun-pronoun agreement
- Misplaced modifiers
- Articles
- Prepositions
- Redundancies
- Clichés

UNIT-III Mechanics of Writing

- Writing introduction and conclusion
- Describing

- Defining
- Classifying
- Providing examples or evidence

UNIT-IV **Writing Practices**

- Comprehension
- Précis Writing
- Essay Writing
- Business Writing-Business letters, Business Emails, Report Writing, Resume/CV

Evaluation Criteria for Exam Question Paper Setting:

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University

Bachelor of Science (Architecture Basics - 1st Semester)

Course Code	Course Name	2P	Int : Ext	Duration of Exam
UC-BTHU102-18	**Communicative Skill Laboratory**	**Credit - 1**	**60:40**	**Viva- Voce**

Course Objective:

The objective of the course is to help the students become the independent users of English language.

Course Outcomes:

At the end of the course, the students will able to –

- Students will acquire basic proficiency in listening and speaking skills.
- Students will be able to understand spoken English language, particularly the language of their chosen technical field.
- They will be able to converse fluently
- They will be able to produce on their own clear and coherent texts.

Detailed Syllabus:

Interactive practice sessions in Language Lab on Oral Communication:

- Listening Comprehension
- Self-Introduction, Group Discussion and Role Play
- Common Everyday Situations: Conversations and Dialogues
- Communication at Workplace
- Interviews
- Formal Presentations

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University

Bachelor of Science (Architecture Basics - 1st Semester)

Course Code	Course Name	1– L, 2 Tut	Int : Ext	Duration of Exam
UC/BSCAB-107/20	Human Values and Professional Ethics	Credits - 2	40:60	03 Hours

Course Objective:

- To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of Existence.
- To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with Nature

Thus, this course is intended to provide a much needed orientational input in value education to the young enquiring minds.

Course Outcome

By the end of the course, students are expected to become more aware of themselves, and their surroundings (family, society, nature); they would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind. They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society). It is hoped that they would be able to apply what they have learnt to their own self in different day-to-day settings in real life, at least a beginning would be made in this direction.

COURSE TOPICS:

The course has 28 lectures and 14 practice sessions in 5 modules:

Module 1: Course Introduction - Need, Basic Guidelines, Content and Process for Value Education

1. Purpose and motivation for the course, recapitulation from Universal Human Values-I
2. Self-Exploration–what is it? - Its content and process; 'Natural Acceptance' and Experiential Validation- as the process for self-exploration.
3. Continuous Happiness and Prosperity- A look at basic Human Aspirations
4. Right understanding, Relationship and Physical Facility- the basic requirements for fulfilment of aspirations of every human being with their correct priority
5. Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario.

6. Method to fulfil the above human aspirations: understanding and living in harmony at various levels.

Include practice sessions to discuss natural acceptance in human being as the innate acceptance for living with responsibility (living in relationship, harmony and coexistence) rather than as arbitrariness in choice based on liking-disliking.

Module 2: Understanding Harmony in the Human Being - Harmony in Myself!

7. Understanding human being as a co-existence of the sentient 'I' and the material 'Body'
8. Understanding the needs of Self ('I') and 'Body' - happiness and physical facility
9. Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer)
10. Understanding the characteristics and activities of 'I' and harmony in 'I'
11. Understanding the harmony of I with the Body: Sanyam and Health; correct appraisal of Physical needs, meaning of Prosperity in detail
12. Programs to ensureSanyam and Health.

Include practice sessions to discuss the role others have played in making material goods available to me. Identifying from one's own life. Differentiate between prosperity and accumulation. Discuss program for ensuring health vs dealing with disease.

Module 3: Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship

13. Understanding values in human-human relationship; meaning of Justice (nine universal values in relationships) and program for its fulfilment to ensure mutual happiness; Trust and Respect as the foundational values of relationship.
14. Understanding the meaning of Trust; Difference between intention and competence
15. Understanding the meaning of Respect, Difference between respect and differentiation; the other salient values in relationship.
16. Understanding the harmony in the society (society being an extension of family): Resolution, Prosperity, fearlessness (trust) and co-existence as comprehensive Human Goals.
17. Visualizing a universal harmonious order in society- Undivided Society, Universal Order- from family to world family.

Include practice sessions to reflect on relationships in family, hostel and institute as extended family, real life examples, teacher-student relationship, goal of education etc. Gratitude as a universal value in relationships. Discuss with scenarios. Elicit examples from students' lives.

Module 4: Understanding Harmony in the Nature and Existence - Whole existence as Coexistence

18. Understanding the harmony in the Nature
19. Interconnectedness and mutual fulfilment among the four orders of nature - recyclability and self-regulation in nature
20. Understanding Existence as Co-existence of mutually interacting units in all pervasive space
21. Holistic perception of harmony at all levels of existence.

Include practice sessions to discuss human being as cause of imbalance in nature (film "Home" can be used), pollution, depletion of resources and role of technology etc.

Module 5: Implications of the above Holistic Understanding of Harmony on Professional Ethics

22. Natural acceptance of human values
23. Definitiveness of Ethical Human Conduct
24. Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order
25. Competence in professional ethics: a. Ability to utilize the professional competence for augmenting universal human order b. Ability to identify the scope and characteristics of people friendly and eco -friendly production systems. Ability to identify and develop appropriate technologies and management patterns for above production systems.
26. Case studies of typical holistic technologies, management models and production systems.
27. Strategy for transition from the present state to Universal Human Order: a. At the level of individual: as socially and ecologically responsible engineers, technologists and managers b. At the level of society: as mutually enriching institutions and organizations.
28. Sum up.

Include practice Exercises and Case Studies will be taken up in Practice (tutorial) Sessions eg. to discuss the conduct as an engineer or scientist etc.

Instructions to the Faculty:

The methodology of this course is explorational. It involves a systematic and rational study of the human being vis-à-vis the rest of existence.The teacher is expected to present the issues to be discussed as propositions and encourage the students to have a dialogue. The process of dialogue is enriching for both, the teacher as well as the students.

It would be desirable to follow it up by Faculty -student or mentor-mentee programs throughout their time with the institution.

Evaluation Criteria for Examination/ Question Paper Setting:

The examiner is required to set nine questions with one compulsory question covering entire syllabus and two questions from each unit. Students are required to attempt five questions with minimum one from each unit.

Core References

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University

Bachelor of Science (Architecture Basics - 1st Semester)

Course Code	Course Name	L - 1	Int. : Ext.	Duration of Exam
UC/BSCAB-108/20	Life skills	Credits - NC		

Course Objective:

To enable students to cope with challenges of today"s world and live a life which is socially and emotionally enriching.

Course Outcomes:

At the end of the course, the students will able to Develop an awareness of the self and apply well-defined techniques to cope with emotions and stress. Use appropriate thinking and problem solving techniques to solve new problems. They will be able to understand "How to study".

Detailed Syllabus:

UNIT- I

Awareness of the surrounding/ immediate environment. Impact of external variable on self & vise- versa

UNIT- II

Critical thinking and its parameter, decision making

UNIT- III

Current affairs (national & global)

UNIT- IV

Self-awareness and empathy, Coping with emotions and stress

Methodology of the course shall be various discussion and sharing experience for the holistic development of students. The suggestive topics can be following but not be limited to these: self-awareness and empathy, coping with emotions and stress, decision making, critical thinking, communication and interpersonal skills.